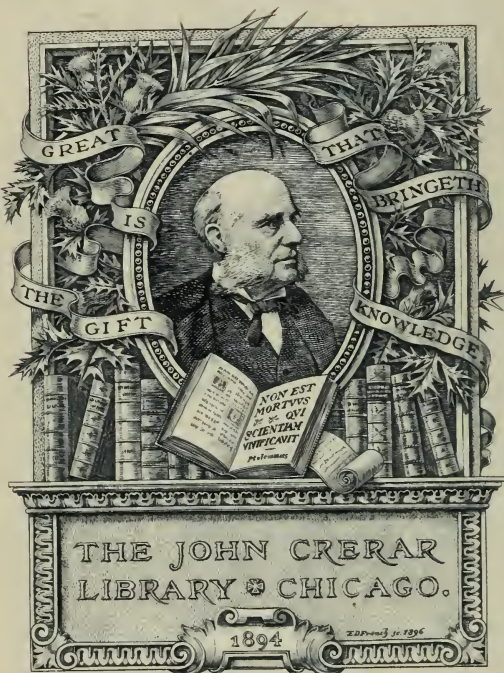




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Colorado Agricultural College





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Issued Quarterly

Number 1

The State Agricultural College

FORT COLLINS
COLORADO

CATALOGUE—1903-04

Published by the
College, May, 1904

Maxims Written by William Penn Between 1665 and 1695

EDUCATION.

We are to Praise to make them Scholars, not just Men. To
teach, rather than to know, which is true Learning.

The first Thing obvious to Children is that is sensible, and
that we make no Part of their Rudiments.

We press their Memory too soon and press it with too many
terms with Words and Rules; to know Grammar and Rhetorick
and a pleasant Tongue or two, that it is too late to be
useful to them. Leaving their natural Genius to Mechanical and
Physical, or Natural Knowledge, uncultivated and neglected,
which would be of exceeding Use and Pleasure to them through
the whole Course of their Life.

To be sure, Languages are not to be despised or neglected,
but Things are still to be preferred.

Children had rather be making of Tools and Instruments of
Play, Shaping, Drawing, Framing and Building, than any learning
some Rules or Principles of Speech by Heart. And those who
would follow with more Judgment and less Trouble and Time.

It were Happy if we studied Nature more in natural Things,
and acted according to Nature, whose Rules are few, plain and
most reasonable.

Let us begin where God begins, go her Pace and close at hand
where she ends, and we can not miss of being good Naturalists.

Many able Gardiners and Husbandmen are yet ignorant of
the Reasons of their Calling, as most Artificers are of the Reasons
of their own Rules that govern their excellent Workmanship.
But a Naturalist and Mechanick of this sort is Master of the
Reasons of both, and might be of the Practice too if his Industry
went pace with his Speculation; which were very commendable,
and without which he can not be said to be a complete Naturalist
or Mechanick.

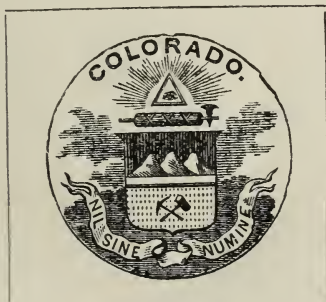
Twenty-Fifth Annual
Register of the Officers
and Students of the

COLORADO STATE COLLEGE

Of

AGRICULTURE
==== And the ====
MECHANIC ARTS

Fort Collins, Colorado
1903-1904



Express Print, Fort Collins, Colorado.

1980
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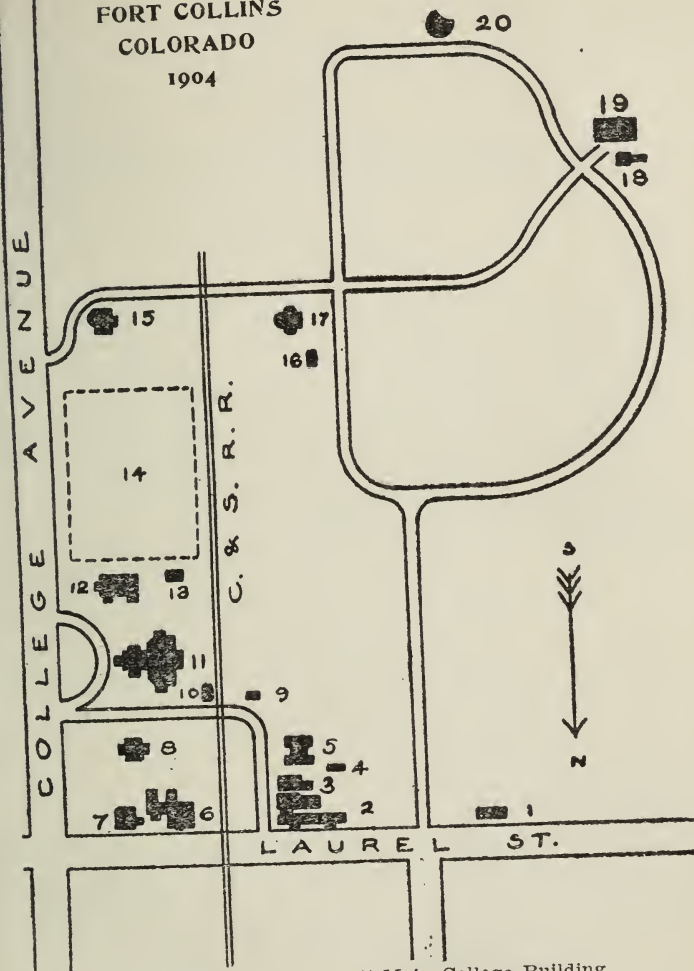
MAP OF THE CAMPUS OF

The State Agricultural College

FORT COLLINS

COLORADO

1904



- | | |
|---------------------------------------|---|
| 1 Horticultural Barns. | 11 Main College Building. |
| 2 Mechanic Arts Hall. | 12 Chemical Laboratory. |
| 3 Mechanical Experimental Laboratory. | 13 Apiary. |
| 4 Hose House. | 14 Athletic and Parade Grounds. |
| 5 Commercial College. | 15 Agricultural Hall. |
| 6 Horticultural Hall. | 16 Barn for Farm Residence. |
| 7 Domestic Science Hall. | 17 Residence of Professor of Agriculture. |
| 8 Civil Engineering Building. | 18 Office and Tool House. |
| 9 Meteorological Station. | 19 College Barns. |
| 10 College Station. | 20 Sheep Paddocks. |
- Horse Barn, Lavatory and Central Heating Plant added recently.

127964

59798

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LOCATION AND HISTORY

Location.—The State Agricultural College is located in Fort Collins, Colorado, the county seat of Larimer County, which is one of the most prosperous agricultural counties in the State. The town contains 5,000 inhabitants, and is beautifully situated, about five miles from the foothills, and in full view of Long's Peak and many miles of the Snowy Range. Its supply of water is derived from the melting snows of the mountains; its buildings have electric light, and its sidewalks are exclusively made of flag-stone, which is found in large quarries almost at its doors.

The College is at the south side of the town; on either side of the Colorado and Southern Railway are its buildings and the farm. Visitors are always welcome. They find the town accessible by four trains, which arrive daily from Denver and other points. With the advantages of pure water, a beautiful location, electric lights and steam heat, not much is left to be desired. All the surroundings of the College are favorable to the carrying on of the work which it is its mission to perform.

History.—The origin of The State Agricultural College of Colorado, like that of its sister institutions in other states, dates back to an act of Congress, passed July 2, 1862. Therein it is proposed to endow in the several States and Territories, by grants of public lands, "a college where the leading object shall be, without excluding other scientific and classical studies, and including Military Tactics, to teach such branches of learning as are related to agriculture, and the mechanic arts in such manner as the Legislature of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

This act gave the College an endowment of 90,000 acres of land.

The Constitution of Colorado gives the College an independent existence and a permanent home in Fort Collins. Three citizens of the town donated to the State two hundred and forty acres of land whereon to erect the necessary buildings. In 1877,

the Legislature provided for the support of the College by levying a tax of one-tenth of a mill on all the taxable property of the State. At this time "The State Board of Agriculture" was created, and all matters pertaining to the management of the College were placed under its control. The one-tenth mill levy was increased, in 1879, to one-fifth of a mill. The corner-stone of the Main College Building was laid July 29, 1878. This building was completed and ready for occupancy early in the following year.

The initial term of the College opened September 1, 1879. The record shows the enrollment of twenty different students at the close of this term. There was but one course of study. The college year began with the spring term and closed with the autumn term, the vacation season occurring in midwinter. The calendar for 1881-1882 shows the abandonment of this arrangement and the adoption of the present plan of three consecutive terms of thirteen weeks each, with a short vacation at Christmas season and a long vacation extending from "Commencement Day," early in June, to the first Monday in September.

Elective studies are first noted in the catalogue for 1886-'87. The next year brings the announcement for the differentiation of the work at the close of the Sophomore year. Two courses, the Agricultural and the Mechanical, are outlined. The Irrigation Engineering Course and the Ladies' Course were first scheduled in the catalogue for 1899-'90. The Commercial Course, to be completed in two years, was introduced in 1896.

The College now comprises the following-named departments: Agriculture, Horticulture and Botany, Animal Industry, Chemistry and Geology, Zoology and Entomology, Mechanical Engineering, Civil and Irrigation Engineering, Electrical Engineering, Mathematics, Constitutional History and Irrigation Law, Logic and Political Economy, History and Literature, Rhetoric and Philosophy, Architecture, Domestic Science, Veterinary Science, Modern Languages, Commercial Course, Military Science, and the Experiment Station.

Provision is made for instruction in Latin, Oratory, and Physical Culture.

The work of the College is carried on in strict conformity with a section of the General Laws of the State, which reads as follows:

"The design of the institution is to afford thorough instruction in agriculture and the natural sciences connected therewith. To effect that object most completely, the institution shall combine physical with intellectual education, and shall be a high seminary of learning, in which the graduates of the common schools, of both sexes, can commence, pursue, and finish a course, terminating in thorough theoretical and practical instruction in those Sciences and Arts which bear directly upon agriculture and kindred industrial pursuits."

THE AGRICULTURAL EXPERIMENT STATION

The Agricultural Experiment Station is a department of the College in accordance with the Act of Congress of 1888, commonly known as the Hatch Act. The station is supported by an annual Congressional appropriation of \$15,000. This is available for conducting investigations and experiments, and in disseminating the results of such investigations. It is also aided in various ways by the State Board of Agriculture.

The investigations of the station are made principally at the main station at Fort Collins, where the equipment is located; but in case the necessities of an investigation or the urgent needs of any part of the State are helped by entering on observations elsewhere, this is done so far as the time and means permit. With the large area of Colorado and the diversity of conditions a great variety of questions arise for solution. The necessities of our conditions confine us to the more important, using the results of other stations where applicable to our conditions. The situation in our State and the peculiarities of our agriculture indicate that the principal efforts should be along the lines related to irrigated agriculture. The station has for years given attention to the growth of sugar beets in all parts of the State and in conjunction with the Department of Agriculture at Washington has distributed seed and made analyses which have given the knowledge for the establishment of factories; has carried on co-operative experiments, with the aid of many, on irrigation questions, as on the duty of water and the determination of seepage from hundreds of miles of streams and ditches; co-operated in the investigation of fruit pests and plant diseases, etc. The director acts as special agent of the United States Department of Agriculture in the sugar beet and sorghum investigations, and another member of the staff acts as special agent in co-operative grass and sugar beet seed investigations. Under a recent act of Congress all seeds of grass and forage plants are distributed through the Experiment Station instead of through Congressmen or the Department of Agriculture. At the present time much attention is being given to Animal Industry.

There are two field stations, one near Rocky Ford and one at Cheyenne Wells on the Great Plains. Each of these is a portion of the main station, with a superintendent in charge, carrying on the investigations outlined or approved by the director and adopted by the State Board of Agriculture.

The publications of the station are sent without charge to those desiring them. They are of four classes:

1. **Bulletins.**—Over one hundred have been published on various topics of agricultural interests. These are distributed, so far as the editions permit, to those interested in Colorado agriculture. There are bulletins on irrigation matters, alfalfa, sugar beets, barley and other field crops, cattle and sheep feeding, strawberries, small fruits and other garden crops, insects, etc. Lists of those printed can be supplied. The bulletins are sent regularly to those whose names are on the mailing list.

2. **Annual Reports.**—These are largely administrative and technical. They are not prepared for general distribution, and hence issued in smaller editions. The last is the Sixteenth Annual Report.

3. **Press Bulletins.**—Shorter statements of experiments in various lines, or information needing immediate distribution. Sent to papers and to individuals, according to subject matter. Issued as the need arises.

4. **River Press Bulletins.**—These are weekly reports issued during the irrigation season, rendering information on the current water supply of the Cache a la Poudre River, obtained in pursuance of other investigations, available to the public. Issued in small numbers. Sent to the newspapers of Northern Colorado and to interested individuals.

Many bulletins are out of print. Copies are desired to complete sets for libraries.

For Station publications or general correspondence, address: The director of the Experiment Station, Fort Collins, Colorado.

The following Bulletins may be had on application:

No.	Title.	Author.
33.	Seepage, or Return Waters from Irrigation.	L. G. Carpenter
35.	Alfalfa, ...	William P. Headden

36. Sugar Beets.....W. W. Cooke, William P. Headden
38. Sheep Scab; A Few Insect Enemies of the Orchard...
.....C. P. Gillette
39. A Study of Alfalfa and Some Other Hays.....
.....William P. Headden
55. Forests and Snow.....L. G. Carpenter
57. Farm Notes (Alfalfa, Corn, Potatoes and Sugar
Beets).....W. W. Cooke
63. Sugar Beets, A Resume of Work Done by Colorado
Agricultural Experiment Station.....W. P. Headden
64. Press Bulletins Nos. 1 to 11, inclusive.
65. Soil Study, Part III, The Soil.....W. P. Headden
66. Relation of Bovine to Human Tuberculosis, Tuberculin
Tests of College Herd...G. H. Glover and B. C. Buffum
67. Distribution of water, Powers and Duties of Colorado
Officials.....H. N. Haynes
68. Pasture Grasses. Leguminous Crops. Cantaloupe
Blight.....H. H. Griffin
69. Plant Diseases of 1901.....Wendell Paddock
70. Potato Failures. A Preliminary Report.....F. M. Rolfs
71. Insects and Insecticides.....C. P. Gillette
72. A Soil Study. Part IV. The Ground Waters.....
.....W. P. Headden
73. Feeding Value of Beet Pulp. Part II. Beet Pulp and
Sugar Beets for Cows...B. C. Buffum and C. J. Griffith
74. Swine Feeding. Beet Pulp and Sugar Beets. Home
Grown Grains vs. Corn. Other Trials.....
.....B. C. Buffum and C. J. Griffith
75. Lamb Feeding Experiments. Sugar Beets and Beet
Pulp. Grain and Corn. Other Trials.....
.....B. C. Buffum and C. J. Griffith
76. Feeding Beet Pulp to Lambs.....H. H. Griffin
77. Unirrigated Lands in Eastern Colorado.....J. E. Payne
78. The Tomato Industry of the Arkansas Valley..H. H. Griffin
79. Treatment of Stinking Smut in Wheat.....Joseph Reed
80. Onion Growing in the Poudre Valley.....W. Paddock
81. Laying Down Peach Trees.....W. Paddock
82. Colorado Irrigation Waters and Their Changes
.....W. P. Headden
83. Irrigation Waters and Their Effects.....W. P. Headden

84. An Apricot Blight.....Wendell Paddock
 85. Cantaloupe Seed.....P. K. Blinn
 86. Crown Gall.....Wendell Paddock

PRESS BULLETINS.

The following are still available:

No.	Title	Author.
4.	The Beet Army Worm.....	C. P. Gillette
6	A So-Called Blight Cure.....	C. H. Potter
7.	The Seepage Measurements of the Experiment Sta- tion.....	L. G. Carpenter
8.	Potato Failures (1900).....	W. Paddock
9.	Sunshine for 1900.....	L. G. Carpenter
10.	Sugar Beets, Summary from Bulletin 63....	W. P. Headden
11.	How to Fight the Codling Moth.....	C. P. Gillette
12.	Potato Failures (1901).....	W. Paddock
13.	The Best Time to Cut Alfalfa.....	Wm. P. Headden
14.	Return Waters of Boulder Creeks.....	L. G. Carpenter
15.	Return Waters of the Uncompahgre.....	L. G. Carpenter
16.	The Prairie Dog as the Range Pest.....	J. E. Payne
17.	Trials of Macaroni Wheat.....	J. E. Payne
18.	Crops for Dry Farming.....	J. E. Payne
19.	Grasshoppers; Their Habits and Remedies....	C. P. Gillette
20.	Plant Lice and Their Remedies.....	S. Arthur Johnson
21.	Spraying for Plant Lice and the Codling Moth.....	C. P. Gillette

BUILDINGS AND EQUIPMENTS

Main College Building.—College Hall, with its new addition, contains large recitation rooms for the following-named departments: Mathematics; English and Philosophy; History, Literature and German; Latin, Spanish and French; Political Economy and Logic; Constitutional History and Irrigation Law; and Zoology and Entomology. This building also contains commodious Library and reading rooms; Museum and Zoological Laboratory; offices for College officers; rooms for The State Board of Agriculture and the Faculty; and a large, well-arranged Assembly Room, with opera chairs for seating 900 persons, and stage, retiring rooms, cloak rooms attached. This building is heated by steam and has electric lighting throughout. The basement contains an Armory 40x72 feet, for drill, and an adequate Gymnasium; office of The Rocky Mountain Collegian; special work rooms and laboratories; bath rooms; and rooms for janitor, storage, etc.

Chemical Laboratory.—This building is designed after the French Renaissance style of architecture, with the individual grace and picturesque effect of the old French chateaux. It appears in pleasing contrast with the Romanesque structures in the midst of which it is erected. It is constructed of red sandstone rubbed and smoothed. In the interior arrangement, convenience and facility for carrying on efficient chemical analysis are kept in mind.

To the left of the main loggia, on the first floor, is the professors' suite of rooms, including office, balance room and private laboratory—the latter being provided with hoods and direct communication with a storage room in the basement.

To the right the stairway leads to an entrance to the second floor. Directly in front of the main entrance is the qualitative laboratory, 30x38 feet, supplied with working desks large enough to accommodate thirty-two students. The room is provided with nine hoods, storage room and balance room. This room, being an inside room, is lighted by a large sky-light in the roof—a superior system of lighting when the work to be done is considered.

To the left of this laboratory and behind the professors' rooms is the quantitative laboratory, arranged to accommodate twelve students. It is furnished with six laboratory desks, two hoods and a balance room.

All laboratory desks throughout the building are made of quarter-sawed oak tops and butternut sides, drawers, etc. The sinks are placed at the sides of the laboratories. Each desk is provided with gas and water supplies; also a two-inch waste, flush with the top of the desk; this waste takes the place of sinks in the desk and eliminates much uncleanness usually connected with the work. The hoods are furnished with gas and water supplies; also with strong draft, accelerated by steam coils placed in the large vent stacks.

The second floor of the building is arranged into two lecture rooms, each about 26x46 feet. The chemistry lecture room is connected with the apparatus room by a large hood, provided with slides on both sides, making the transfer of apparatus rapid and convenient. There is connection, also, with the museum and chemical cabinet. The geology lecture room is connected with microscopical room and the museum. The basement is used principally for storage and heating purposes, gas generation and some analytical work.

The Experiment Station occupies the western section of the first floor. It consists of a room for the assistants, a large work room, store room, balance room and a small room for nitrogen determinations.

Horticultural Hall.—The Horticultural Hall is located on the north side of the campus, facing Laurel Street, and is used by the Department of Botany and Horticulture. It is one of the most thoroughly constructed and artistically designed buildings on the grounds. The ground plan is 52x64 feet. It is basement, two stories, and attic in height. The basement, which is composed of Pleasant Valley red sandstone, stands high above grade line and gives excellent rooms for grafting, experimental work and the storing of implements. The first story of the building has a ceiling height of fourteen feet and is planned to contain one large lecture room, office, assistant's office, herbarium and other small rooms for experimental work. The second floor is arranged for a large museum, with octagon ceiling; also private laboratories, as well as plant, seed and apparatus rooms. The attic is floored

and used for storage of plants and seeds. The superstructure of the building is composed of Boulder pressed brick, trimmed with Pleasant Valley red sandstone rubbed to a smooth finish and set flush with the brick work. The general character of the building is after the Romanesque style of architecture, the details, including the moulding and carving, being carried out after the Renaissance. This gives the building a character of solidity, yet with sufficient grace of outline and trimming to relieve the too massive appearance generally characteristic of Renaissance design. The building is specially designed to characterize the work of this Department, there being incorporated in the carving and details designs emblematic of the purposes of the building. The roof is heavily trussed and covered with slate. The building is heated thoroughly by the best improved system of hot water. The rooms are thoroughly ventilated by modern means, and much care has been taken to obtain a thorough sanitary system of plumbing and sewerage. The trimmings throughout are of butternut, finished in the natural wood. The hardware is of solid bronze.

Greenhouses and Forcinghouses.—The new greenhouse recently completed is one wing of a plan which contemplates the addition, at some future time, of a palm-house, and a second wing similar to the one built. Its construction is such that the other parts can be added at any time.

The structure is 25x50 feet and consists of a wrought iron frame securely bolted to cast sills which cap, and are supported by, brick walls rising from a stone foundation. The frame carries the heating pipes and also the shafting from the self-locking ventilating machines. The glazing strips are of clear Gulf cypress, fitted to special castings at either end, and firmly fastened to iron purlins. The house is provided with non-freezing gutters and is glazed with the best greenhouse glass. The benches are of iron, with porous tile bottoms and cypress sides. Two lines of sash at the sides and two at the ridge are connected with geared machines which give perfect control over ventilation.

The frame of the house possesses strength, and at the same time offers little obstruction to light. In plan and details the structure is modern; embracing the best that is known in green-

house construction. It was purchased of the Lord & Burnham Company, of New York City.

In addition to this greenhouse there has been added a forcinghouse, 20x50 feet, made of cypress frame resting upon brick walls, and a glass connection between the forcinghouse and the laboratory, which is 14x14 feet. In this latter house the sides are carried perpendicularly to the height of nine feet, affording space for tall plants.

Orchards and Grounds.—The orchards and grounds are carefully laid out and planted to ornamental shrubs and trees. Here are the plantation of forest-trees, the kitchen garden, with its many varieties of vegetables and small fruits, hot-beds and cold-frames.

Agricultural Hall.—This is a very attractive building, constructed of red stone and brick. The entire upper floor is devoted to a spacious hall for an agricultural museum. The first floor is divided into a hallway and four large, comfortable rooms. Here are found the office of the Professor of Agriculture and his assistants, churning rooms, dairy laboratory, and seed rooms. The basement has four apartments, which are used for heating apparatus and storage.

Farm and Stock.—The farm contains 240 acres, nearly all under cultivation. In addition to this there has been recently purchased 360 acres of excellent grazing land near Fort Collins, containing a reservoir and the spring from which the college grounds are supplied with drinking water.

The live stock consists of Clydesdale grade draft horses, Shorthorn, Ayrshire, Polled Angus, Hereford and Jersey cattle, Shropshire sheep, and Berkshire, Tamworths and Poland China hogs. Other representative breeds of stock will be added as rapidly as means and accommodations will permit.

Mechanical Engineering Building.—This building includes two large main portions, two stories high, and an ell, one story high.

The first story of the north front of the building is occupied as follows: The east end contains the office of the professor in charge. The tool room is at the middle of the south side of the room; it is supplied with a good assortment of small tools, such as taps, dies, reamers, gauges, and milling machine cutters. The

tools for cutting, threading and fitting iron pipe are also kept in this room. These tools will handle pipe from one-quarter inch up to two inches. Taps are provided for each size of pipe.

The machine shop is also on this floor and occupies the middle portion of the building. It is supplied with a fine assortment of tools for working the metals. Around the room are benches, with iron vises fitted for the work in chipping and filing.

There are in this room two 16-inch engine lathes, two 17-inch engine lathes, two 14-inch engine lathes, one 13-inch engine lathe, one speed lathe, one 20-inch drill press, one 6-foot planer, one 15-inch shaper, one universal milling machine with gear-cutting attachments, a grindstone, an emery wheel stand carrying two wheels, a universal tool and cutter grinder, a twist drill grinding machine, an emery stand, carrying two wheels 16 inches in diameter, a 36-inch grindstone, a 10-inch sensitive drilling machine, and one power metal saw.

An extra bench, standing near the middle of the room, is fitted with a pipe vise and furnished with the necessary tools for instruction in pipe fitting.

At the west end of this story is a well-lighted classroom used for instruction in Mechanical Engineering. This room contains a number of good models. The upper story of this portion of the building is devoted to bench and machine work in wood. There are 37 benches, each supplied with a complete set of carpenter's tools. The other appliances are, one 24-inch surface planer, one 30-inch band saw, one scroll saw, one double circular saw bench, one foot mortiser, one steam glue heater, eight wood-turning lathes, a 16-inch patternmaker's lathe with compound rest, a wood trimmer, a 36-inch grindstone and a good supply of clamps.

In the lower story of the east main portion of the building is the engine room, containing the 50-horse-power Corliss engine, which furnishes power for the entire plant. This engine is supplied with indicator attachments. The students are given an opportunity to take and work up indicator cards. For this purpose the department has a pair of Crosby indicators. A dead weight gauge tester affords a means of correcting steam gauges.

Opposite the engine-room is the wash-room, with lockers for the use of 100 students.

The drawing-room, which occupies the upper part of this building, has accommodations for fifty students. In the ell portion of the building are found iron store-room, blacksmith shop, and foundry.

The blacksmith shop is fitted up in a most convenient and modern form. There are twenty-five forges, all attached to a system of pipes for supplying a blast to the fires and for taking the gases from the forges. Each forge is supplied with a complete set of smith tools. There are extra tools, sledges, vises, and a pair of metal shears.

The foundry is at the west end of the ell and has very complete appointments. It contains a 20-inch cupola, a brass furnace, a core oven, and about 200 flasks of various kinds and sizes. It is well supplied with the necessary bench and floor tools, ladles, shanks and skimmers. Most of the equipment for this room, including the cupola and brass furnace, was made by the students.

Mechanical Engineering Laboratory.—The building is situated directly south of the present Mechanical Engineering Building, and is known as the Mechanical Engineering Laboratory. It is 40 feet wide and 60 feet long, and built of pressed brick.

The object of the work of the Laboratory is to give the advanced students an opportunity to make investigations of the physical properties of materials of construction entering into buildings, machinery, and other structures; and also to make tests and examinations of different kinds of boilers, engines, motors, pumps, and all kinds of mechanical appliances which may be obtained for the use of the department. A number of pieces of apparatus have been given by generous parties for carrying on this work.

As a great deal of the work of investigation is along the line of steam engineering, a new 80-horsepower boiler is placed in the Laboratory in order to have the steam needed close at hand. The boiler is so arranged as to allow of its being subjected to regular commercial and scientific tests, and students are instructed how to find the horse-power, how to test for strength, how to test the quality and quantity of the steam furnished by the boiler, and to obtain its efficiency.

To test the quality of steam, that is, to find out the amount of moisture in it, there are on hand four different styles of calorimeters, a Carpenter throttling calorimeter, a Carpenter continu-

ous calorimeter and a Barrus calorimeter. There is also a calorimeter devised and made by the students. In connection with these calorimeters there are thirteen thermometers of a high degree of accuracy. These are cylindrical bulb thermometers. There are also several high-grade steam-pipe thermometers, designed to get the temperature of steam flowing through pipes.

A draft gage is also provided for measuring the draft of the smoke stack in connection with the boiler trials. Provision is also made to secure samples of the chimney gases for chemical analysis, in order to assist in ascertaining the thoroughness of combustion of the fuel. The temperature of the gases may also be taken with a suitable instrument which is provided. Several mercurial pressure and vacuum columns are provided. All instruments are carefully calibrated before tests are made with them.

A large water tank and weighing scales are provided, so that the amount of water used and turned into steam may be ascertained while the trial is being made. Three steam engines are in the building. One is of 12-horse power, made by the Denver Engineering Company; one of 6-horse power, another of 5-horse power; the latter was made by the students. These engines may be run with different loads and at different speeds. Upon these engines brakes are placed, so that a load on the engine may be accurately measured. The students are instructed how to set eccentrics and valves, and how to ascertain the horse power of the engine. For this latter purpose, there are on hand two Crosby steam engine indicators, with five springs each, for varying pressures of steam. Brumbo pulleys are ready for use with the indicators and are used to make the stroke of the indicators proportionate to the stroke of the engine. There is also a reductor at hand, for the same purpose, made by Schaeffer & Budenburg, New York.

A United States Observatory barometer, made by Henry J. Green, of Brooklyn, is in the building, to be used in connection with the boiler, engine and pressure tests of various kinds. The airbrake appliance, made by the Westinghouse Airbrake Company, is in this building. It consists of a complete outfit for engine, tender and one car, including all the tanks, valves and engineer's triple valve. Besides using this for the purpose of investigating, the air pump attached is used to furnish air to other

kinds of pneumatic machinery. There is also a quick action triple valve, made by the New York Airbrake Company.

There are micrometers and verniers ready for use, which will measure in thousandths of an inch. An ingenious water meter registers the number of gallons of water passing through a pipe in a given time. This is used in connection with the hydraulic work. The planimeter is used for measuring the area of diagrams drawn upon paper, and is used in connection with the figuring out of test diagrams of various kinds. It is of the Amsler design. Revolution counters are used in connection with the engine and motor tests.

There are two steam pumps in this laboratory, one made by George F. Blake, of New York, the other by M. F. Davidson, of Brooklyn, N. Y. The setting of valves and the testing of the efficiency of these pumps are features of the work. Nine steam gages have been presented by different makers, which give a good variety upon which to make investigations. For testing gages two first-class machines are ready; one for testing pressure gages, the other for testing vacuum gages.

Two sizes of the Hancock inspirator furnish means of studying this highly interesting instrument. Tables are arranged at convenient intervals in the room at which the students are first required to make their theoretical and mathematical calculations, and afterwards compare the practical results of the tests with these calculations. Tabulated results of all tests are made upon blanks of suitable form.

Civil and Irrigation Engineering.—The building formerly used as a Dormitory is at present used as the Department of Civil and Irrigation Engineering.

The main classroom is on the second floor. It has seats for a class of forty-six students. The windows are fitted with shutters, in order that the solar projection apparatus may be used for illustration of topics under instruction. The table is fitted with water-tank and pneumatic troughs. A room on the second floor is used for storage of the instruments used in class instruction and as a museum of irrigation and engineering appliances. On the first floor are the offices, and the room for carrying on the work of the section in the Experiment Station. The offices of the director of the Experiment Station are also in this building. There is also a draughting-room for the Engineering students.

The basement is taken up with the physical and the hydraulic laboratories. In the physical laboratory are firm tables provided for the students, with place for each student, where the apparatus may be left from one day to another without disturbance. A concrete floor to lessen injurious vibration is used to make the room available for the use of delicate instruments.

The hydraulic laboratory has tanks and a large set of suspended scales, weighing 5,000 pounds, for testing the flow of water through orifices and over weirs. Here also is placed a Pelton water motor and the cement-testing instrument, together with other equipment, pipes, pressure gages, etc., for experimentation. The experiments in measuring water in streams are carried on in the adjacent streams.

In Physics, the Department has an excellent working equipment in all branches, the equipment having been selected for its usefulness, and for its adaptability to experimentation as well as for illustration. It includes a set of United States Standard Weights and Measures, prepared for the College under act of Congress; micrometers, balances, spherometers, gages, gyroscope, air pump and accessories, thermometers, mirrors and lenses, projecting lantern, electrical machines, dynamo, batteries, standard B. A. ohm, Queen 100,000 ohm resistance coil, astatic, sine, tangent and d'Arsonval and other galvanometers; Edelmann ohmmeter, quadrant, electrometers, voltmeters, telephones, standard cells, a complete set of standard units, and much minor equipment.

For use in Engineering and Hydraulics it has Colorado, Lallie, Price, Fteley current meters, the latter with an electrical recording attachment; a Darcy-Pitot tube; registers to record the rise and fall of water, one imported from Paris to record, electrically, at a distance of some miles; large scales and tanks for experimentation on the flow of water through orifices and over weirs, and to study the laws of flow; pressure gages; photographs and plans of hydraulic structures; and a collection of slides for the lantern made from negatives taken in this and other countries. A water motor, presented to the Department by the Pelton Water Wheel Co., a water meter presented by the Equitable Meter Co., and a centrifugal pump add to the equipment.

In Engineering instruments, it has Gurley and Randolph compasses; a Foster, two Gurley, a Young, and several Buff and Ber-

ger transits; eight levels, including makes of Randolph, Gurley and Buff and Berger; plane table of Keuffel and Esser; six compasses; leveling rods of various patterns; chains and tapes for land surveying and for engineers' use; hand-level; planimeter for determining areas; integrator, apparatus for photographic surveying, odometer, etc.

A Fairbanks cement tester, with full set of moulds, gives the means of testing the strength of cements to 1,000 pounds per square inch. A large 50,000-pound testing machine gives the opportunity to test other materials within its limits.

A complete set of meteorological instruments, many of them imported, is in daily use. This set includes barometers, thermometers, psychrometers, anemometers, statoscope, pluviometers, actinometers, solar and terrestrial thermometers, evaporation tanks, soil thermometers, etc.

Domestic Science.—The Department of Domestic Science occupies a building which is fitted up for a home. On the lower floor is a large kitchen 25x34 feet in size. It is well lighted and contains furniture and classroom utensils so that a large class can be accommodated. Adjoining this room is a smaller kitchen, which is very convenient for extra work, or for use on occasions of entertaining, since it opens into the dining room. This latter room is used only for the smaller functions and special demonstrations in table setting, sewing, etc.

At the end of the hall is situated the laundry, which is furnished with porcelain-lined stationary wash-tubs, laundry stove and tank, cupboard, ironing-boards, etc. The other room on this floor is a store-room.

On the second floor, to the right on entering the hall, is a reception room, suitably furnished. Back of this is a bedroom, which is designed to be a model room. Another room opens to the right at the lower end of the hall. This contains two apartments, conveniently equipped with bath-room appliances. These rooms are for the use of such young women in the College as may desire to use them. Situated as they are, immediately over the laundry, there is no difficulty in heating the water.

The classroom, also 25x34 feet, is located on the south side of the building immediately over the kitchen. It is furnished with sewing machines, tables and large cases. The latter are

used as receptacles for work and an individual compartment is supplied each student.

This same room serves additional purposes. Sometimes it is a reception-room, at other times a dining-room; as the same tables are used for cutting, sewing and dining. The chinaware is also kept in this room in nicely arranged closets. From the rear of the classroom one enters the fitting-room, which, in addition to general furniture, contains a large closet where garments in process of making, materials, etc., can be protected.

The accommodations and appliances are ample for classroom and laboratory work in everything connected with household management.

Military Science and Tactics.—This Department has two hundred and fifty cadet rifles and two 3-inch rifle field pieces from the War Department. Each year there is issued a supply of ammunition for both branches of service, in order to give training in infantry skirmish drill, target practice and artillery firing.

The New Lavatory.—Cleanliness, health and good taste are not only made possible, but inculcated by the use of this building which is a model of convenience and modern appliances.

The walls are of pressed brick, the floor tile, the furnishings marble with the best plumbing.

Baths—both tub and shower—are provided. Also lockers for the students of the Athletic Association.

The institution is absolutely sanitary since the erection of this perfectly appointed Lavatory.

The New Central Heating Plant and Electrical Engineering Building.—A two-story building of grey sandstone has recently been completed, in the first story of which will be installed a central heating plant. From this all the buildings can be adequately and safely heated at far less expense than by the present system.

An electric plant will also be established for furnishing the grounds and buildings with electric light. In the second story is placed the equipment of the Electrical Engineering Department.

The New Horse Barn.—After remodeling the old barn at an expense of eighteen hundred dollars for the use of cattle, it was necessary to erect a building for horses. This was done at a cost of six thousand dollars, a special appropriation from the State. It is said to be the most perfect barn of its kind in the West. It

il serve as an educational model for both students and visiting farmers. It was designed by a student of the Department of Architecture.

The New Hog Barn.—Believing that a great industry has been most unwisely neglected in Colorado it is proposed to carry on extensive experimental work in the breeding and feeding of hogs. To this end a suitable building has recently been erected. It also will serve as an educational model, every device being employed conducive to the health and growth of the animal.

Scientific and Technical Apparatus.—All the departments of science have elaborate, modern and costly equipment. Fine cabinets of specimens are to be found in the Museum. Laboratory work in agriculture and dairying, horticulture and botany, chemistry, physics, geology and mineralogy, comparative anatomy and entomology is done with the aid of apparatus representing a cost of \$40,000.

The departments of Mechanical Engineering and Civil and Irrigation Engineering have a combined equipment worth over \$29,000.



First and Second Sub- Freshman Years

**Leading to Freshman
Year of All Courses
and Junior Year of
Commercial Course....**

FIRST SUB-FRESHMAN YEAR.

FALL TERM.

Algebra, 5.	}	P. M.—Drawing and Recitations.
Elementary Rhetoric, 5.		
History, 5.		

WINTER TERM.

Algebra, 5.	}	P. M.—Shop. Domestic Science.
Elementary Rhetoric, 5.		
$\frac{1}{2}$ Physiology, 5.		
$\frac{1}{2}$ General History, 5.		

SPRING TERM.

Algebra, 5.	}	P. M.—Drawing and Recitations.
Elementary Rhetoric, 5.		
American Literature, 5.		

SECOND SUB-FRESHMAN YEAR.

FALL TERM.

Geometry, 5.	}	P. M.—Physical. Laboratory.
Physics, 5.		
*German, French, or Spanish, 5.		

WINTER TERM.

Geometry, 5.	}	P. M.—Physical Labora- tory.
Physics, 5.		
German, French, or Spanish, 5.		

SPRING TERM.

Geometry, 5.	}	P. M.—Shop. $\frac{1}{2}$ Summer Gowns. $\frac{1}{2}$ Cooking.
Elem. Botany, 5.		
German, French, or Spanish, 5.		

Note.—Elementary Rhetoric and Composition is continued informally throughout the second sub-freshman year. For particulars consult course of study of Department of Rhetoric and Philosophy, p — of this catalogue.

*Agricultural Students will elect German.

Schedule of Agricultural Courses

COURSES OF STUDY.

The instruction offered in agriculture has been divided in this catalogue for the first time into five departments, as follows:

1. Department of Animal Husbandry (page 42).
2. Department of Agronomy (page 41).
- 3.- Department of Horticulture (page 46).
4. Department of Veterinary Science (page 50).
5. Department of Agricultural Chemistry (page 82).

The students in all the departments of the Agricultural Division are required to take the same course of study during the Freshman and Sophomore years. In the beginning of the Junior year those students desiring to specialize in either Horticulture or Veterinary Science may elect the course of study offered in these departments. All the work offered in the Senior year of the Agricultural course is made elective, which gives the student a still wider choice in selecting his major study. He may elect a course in either Animal Husbandry, Agronomy or Agricultural Chemistry at the beginning of his Senior year. The professor in charge of the division will direct the selection of supplementary studies to make at least fifteen hours of class room work during the Senior year.

The Agricultural College is designed primarily to teach the sciences that underlie the successful practice of modern agriculture with sufficient English, German, mathematics, history and other supplementary studies to develop the minds of the agricultural students to the intellectual level of the best educated men in any profession. Special attention is given, however, to Live Stock Husbandry, and to the various operations of farming.

Facilities for Instruction.—Our facilities and equipment for offering instruction are almost unsurpassed by any agricultural school and they are continually being increased and improved. Classroom work is made more interesting by photographs, lantern slides and museum specimens.

Our dairy laboratory is well equipped with modern apparatus. A gasoline engine furnishes the power to run the separators and

churns, and a boiler furnishes steam for the large milk tester, sterilizer and pasteurizer, and also for heating water. Here are different forms of churns, separators, butter workers, and milk and curd testers. We now have well equipped sterilizers, incubators and all the equipment necessary for practical work in Bacteriology. The students are given enough instruction in this line to enable them to understand and control these tiny organisms which may be so beneficial or harmful to the dairyman. The student handles the milk from the cow to the butter tub or print, by either the separator or deep cold setting process, and learns methods of valuing milk and paying for it according to test.

The College farm of two hundred and forty acres is happily situated for the purposes of instruction. Here we have exemplified most of the problems of getting water to land and of carrying off the surplus and seepage that will arise anywhere in the state. The main irrigation water supply is the pipe line nearly a mile from the canal. The carrying away of surplus water and the reclaiming of seepage land is shown in all its phases. Some of the finest crops on the farm are grown on what was once a cat-tail swamp and which has been reclaimed by a system of tile drains.

Especially valuable to the student is the fact that the farm is a part of the Experiment Station. He has the advantage of watching the several experiments and noting the results. Here he can see and become acquainted with all the new forage and grain crops that are heralded by the seed trade, learn their adaptability to Colorado soils and conditions while reference to the very complete library of the publications of all the other experiment stations will enable him to form a correct judgment as to their value for Colorado as compared with their usefulness in other parts of the country. This feature alone will save the student a great deal of time and money when he attempts to carry on a farm of his own.

Since Colorado is a great stock-producing state, one would expect the Live Stock Department to be well supplied; nor will he be disappointed. The production of meat naturally holds the first place, and the possibilities are exemplified by the finest herd of registered Shorthorns to be found in the West. Several additions have recently been made to the herd at great expense. The Herefords, which are so well thought of on western ranges,

are represented by a small herd and a friend of the College has recently imported for us a choice herd of Aberdeen Angus cattle. For the dairy we have, through the generosity of the person alluded to above, a splendid herd of Ayrshires imported from Scotland. It is the avowed intention of the College authorities to add specimens of other breeds as fast as College finances will permit.

Swine are represented by the leading breeds. Recent purchases of Tamworths, Berkshires, English Yorkshires and Poland Chinas have been made. We already have a choice flock of Shropshire sheep and will very soon add several of the other leading breeds. Experiments are continually being carried out in stock breeding and it will be seen that the student has excellent opportunities for studying the various branches of the live stock industry.

The agricultural students have formed an Agricultural Club which does most excellent work. In addition to this, a grange organization holds regular meetings at the College. It will be seen that in addition to our general equipment, the student is thrown in contact with most active agricultural work in all its branches, so his education is not confined to mere class room routine. While our graduates of the past have become most successful in their chosen work, the graduates of the future have much to look forward to in increased facilities and advantages.

AGRICULTURAL COURSE

FRESHMAN YEAR.

FALL TERM.

Anatomy, 5.	}	P. M.—Botany, 10.
Rhetoric, 5.		
Farm Crops and Crop Production, 5.		

WINTER TERM.

Anatomy, 5.	}	P. M.—Shop, 10. Clinics, 5.
English Literature, 5.		
Rhetoric, 2.		
Themes, 3.		

SPRING TERM.

Physics, 5.	}	P. M.—Physical Laboratory, 10. Clinics, 5.
Materia Medica, 5.		
German, 5.		

SOPHOMORE YEAR.

FALL TERM.

Physiology, 5.	}	P. M.—Zoological Laboratory, 10. Stock Judging, 5.
Zoology, 5.		
Breeds of Live Stock, 5.		

WINTER TERM.

½ Breeds of Live Stock, 5.	}	P. M.—Botany, 10.
½ Chemistry, 5.		
Physiology, 5.		
Horticulture, 5.		

SPRING TERM.

Farm Mechanics and Farm Buildings, 5.	}	P. M.—½ Farm Crops, 10. ½ Entomological Laboratory, 10. Stock Judging, 5.
English History, 3.		
Entomology, 5.		
Anatomy, 2.		

JUNIOR YEAR.**FALL TERM.**

Feeds and Feeding, 4.	}	P. M.— $\frac{1}{2}$ Stock Judging, 10. $\frac{1}{2}$ Chemistry, 10.
Elementary and Inorganic Chemistry, 5.		
Veterinary, 5.		
Irrigation and Range Law, 3.		

WINTER TERM.

Soils; Fertility and Management, 3.	}	P. M.—Chemistry, 10.
Physiological Botany, 6.		
Advanced History, 3.		
Inorganic Chemistry, 5.		

SPRING TERM.

Soil Physics, 4.	}	P. M.— $\frac{1}{2}$ Chemical Laboratory, 10. $\frac{1}{2}$ Dairying Laboratory, 10.
Animal Parasites, 1.		
Dairying, 4.		
Organic Chemistry, 5.		
Advanced History, 3.		

SENIOR YEAR.**FALL TERM.**

International Law, 3.	}	P. M.—Analytical Chemistry, 10. Stock Judging, 5. Agronomy, 10.
Feeds and Feeding, 5.		
General Bacteriology, 5.		
Agricultural Chemistry, 5.		
Veterinary Science, 5.		
Literature, 5.		
Agronomy, 5.		

WINTER TERM.

Political Economy, 3.	}	P. M.—Agronomy, 10. Embryology, 6. Histology, 4. Chemistry, 10.
Animal Breeding, 5.		
Literature, 4.		
Geology, 5.		
Embryology, 2.		
Evolution, 1.		
Histology, 1.		
Agronomy, 2.		
Chemistry, 5.		

SPRING TERM.

Fiction, 5.
U. S. Constitution, 4.
Advanced Botany, 5.
Chemistry, 5.
Animal Husbandry, 10.
Agronomy, 5.
Hydraulics, 5.
Veterinary.

P. M.—Chemical Laboratory, 10.
Agronomy, 10.
Animal Husbandry, 10.

NOTE.—Students in the Senior class are required to elect at least fifteen hours of class room or research work per week as directed by the professor in charge of the department.

AGRONOMY.

The lectures, classroom and laboratory work in this department of the Agricultural course, treat of farm management, farm crops, soils, their physical properties and fertility, and farm mechanics and buildings.

Course I.—Farm Crops and Crop Production.—This course includes the selection and grading of the various kinds of seed grain; a study of the principles underlying the propagation, germination and growth of farm grains; time and methods of planting and cultivating; effects of thick and thin seeding; rotation of crops and destruction of obnoxious weeds. Five times a week, Fall term Freshman year.

Course II.—Farm Mechanics and Farm Buildings.—This course includes a study of the principles of construction and operation of farm tools and machinery such as plows, harrows, seeders and drills, corn and potato planters, mowers, binders, etc. Also a study of farm power such as gasoline engines, wind mills, horse powers and farm engines, pumps, feed cutters and feed grinders, fanning mills and other machines.

The location and arrangement of farm buildings is studied, also their construction and cost. Some attention is also given to the different kinds of fences, their costs, construction and desirability. Five times a week, Spring term, Sophomore year.

Course III.—Soils and Soil Physics.—This course comprises a study of the origin, formation and classification of soils; soil

moisture and methods of conserving it. The effect upon the soil of plowing, harrowing, cultivating, rolling and cropping; the preparation of seed beds and the effect of drainage as affecting moisture, root development, etc. Five times a week, Spring term, Junior year.

Course IV.—Soils; Fertility and Management.—In this term's work is given a course of lectures on maintenance of fertility, fertilizers and rotation. The influence of barnyard manure, artificial fertilizers and green manures upon the quality and yield of the various crops. Five times a week, Winter term, Junior year.

Course V.—Research Work in Soil Physics and Plant Breeding.—During the senior year a strong course of advanced study and research work is offered to students electing agronomy as a major study. This will include special work in soil physics, the improvement of farm crops by selection and breeding; effects of inbreeding and crossing plants; the study of the methods and results of experiments in crossing and selection and other means of improving farm crops.

ANIMAL HUSBANDRY.

Course I.—Breeds of Live Stock.—One and one-half terms in the Sophomore year are given to the study of breeds of horses, cattle, sheep and swine. Each breed is taken up separately and studied from its earliest written history. The environments under which the breed was developed, the men who had been prominent in establishing the breed and the methods of improvement are reviewed. The characteristics and special adaptability of the breeds are covered thoroughly also the importations into the United States, the numbers that have been bred and the popularity that they have attained in this country. The facts are given together with all the detail matter that goes to give a student familiarity with each breed of live stock. This subject is taught in text books, by lectures and demonstrations and is given one hour a day five times a week.

Course II.—Market Types of Sheep and Swine.—This course covers the judging of mutton and wool sheep and bacon and lard hogs. Score cards are used until the student is familiar with the desirable and undesirable qualities of each type and has

learned just how much stress to lay on the different parts of the animal. Later, groups of five to eight animals are brought before the class and each student is required to award a first, second and third place and give detailed reasons for so placing. The professor in charge reviews the merits and defects of each animal and places them in the order of their merits. The equivalent of six hours per week is given to this work during the fall term of the Sophomore year.

Course III.—Market Types of Horses and Cattle.—This course is a continuation of Course II. and covers the judging of beef and dairy cattle and light and heavy horses. Score cards are used at first, and then groups of five to eight animals are brought before the class to be placed according to their merits. Judging equivalent to six hours per week during the Spring term of the Sophomore year is given.

Course IV.—Feeds and Feeding.—This course includes a study of the anatomy of the digestive tract of farm animals, digestion, animal nutrition, source of muscular energy, composition of animal bodies, feeding standards and the composition and by-products of the leading cereals. This subject is taught from text books and by lectures one hour a day four times a week during the Fall term of the Junior year.

Course V.—Stock Judging.—This course embraces the judging of representatives of the different breeds of sheep and swine according to their official breed standards. Judging equivalent of eight hours per week is given.

Course VI.—Dairying.—This course includes the study of the secretion and composition of milk, the separation of cream by gravity and by centrifugal separation, the Babcock test for butter fat, ripening of cream, churning of butter, the bacteria of milk, cheese making, etc. One hour a day four times a week is given to this work during the spring term of the Junior year.

Course VII.—Dairy Laboratory.—This course includes the practical work of handling milk, running cream separators, ripening cream, making starters, churning, working, salting and packing butter and making cheese. Two hours daily during one-half of the Spring term, Junior year, are devoted to this course.

Course VIII.—Stock Judging.—This course includes the judging of representatives of the different breeds of horses and cattle according to the official breed standards. Judging equivalent of six hours per week one-half of term, is given in this course.

Course IX.—Feeds and Feeding.—This course is a continuation of Course IV. It covers the feeding of farm animals of all classes from birth to maturity and the relative values of the different feeding stuffs for each class of live stock. Five hours a week are given to this work during the fall term of the Senior year.

Course X.—Animal Breeding.—This course includes a study of the principles of breeding, embracing heredity, atavism, variation, selection, etc., with the methods of in-and-in breeding, cross breeding, etc. The methods of breeding practiced by our leading improvers of live stock are also studied. Five hours each week are given to this work during the winter term of the Senior year.

Course XI.—Animal Husbandry.—This course embraces lectures and practical work in the care and management of live stock. A certain amount of practical work in feeding and grooming, watering, etc., of the different classes of live stock will be required of each student during this course.

Course XII.—During the Winter and Spring terms of the Senior year, students in the Agricultural course that elect Animal Husbandry as their major study, will be given advanced research and investigational work with live stock, combined with lectures and library work.

Students in the Senior Year of the Animal Husbandry and Agronomy Departments will be required to submit an acceptable thesis on some line of original investigation before graduation.

THE SHORT COURSE

A great majority of farmers and farmers' sons in Colorado are so situated that it is impossible for them to avail themselves of the regular College course in Agriculture and Stock Raising. To accommodate these and to broaden the scope of our agricultural education in this State, the College will offer a short course in practical agriculture in January and February, 1905. This course will be designed particularly for the busy practical farmer who has already had experience in the management of farms and the care of live stock. Particular attention will be given to live stock subjects such as judging, feeding, breeding, and the care and management of the various classes of stock that are adapted to our Western conditions.

Lectures and discussions will also be delivered on the various phases of general agriculture such as potato growing, cultivation of the soil, farm crops, and the application and usage of water in irrigating.

A short course of lectures on manures and fertilizers will also be given. Farmers' wives and daughters will find subjects of interest in the farm dairy work and lectures, and also in the lectures on Domestic Science and in the Horticultural and Vegetable garden instruction.

A circular outlining the scope and character of the work offered will be issued early in September. For further particulars address Prof. W. L. Carlyle, in charge of the course.

HORTICULTURE AND BOTANY

For Course of Study for Freshman Sophomore years see page 39.

JUNIOR YEAR.

FALL TERM.

Horticulture, 5.	}	P. M.— $\frac{1}{2}$ Horticultural Lab. 10. $\frac{1}{2}$ Chemical Lab., 10.
Chemistry, 5.		
Feeds and Feeding, 4.		
Irrigation and Range Law, 3.		

WINTER TERM.

Horticulture, 5.	}	P. M.—Chemical Lab., 10.
$\frac{1}{2}$ Floriculture, 5.		
Advanced History, 3.		
Chemistry, 5.		
Physiological Botany, 6.		

SPRING TERM.

Entomology, 4.	}	P. M.— $\frac{1}{2}$ Entomological Laboratory, 10. $\frac{1}{2}$ Chemical Lab., 10.
Animal Parasites, 1.		
Advanced History, 3.		
Organic Chemistry, 5.		
Soil Physics, 4.		

SENIOR YEAR.

FALL TERM.

International Law, 3.	}	P. M.—Chemical Lab., 5. Agronomy, 5.
Agronomy, 5.		
Literature, 5.		
General Bacteriology, 5.		
Chemistry, 5.		
Horticulture, 5.		

WINTER TERM.

Political Economy, 3.
Chemistry, 5.
Embryology, 2.
Evolution, 1.
Botany, 5.
Geology, 5.
Literature, 5.
Histology, 1.

P. M.—Chemical Lab., 5.
Embryological Lab., 3.
Botanical Lab., 5.
Histology, 4.

SPRING TERM.

U. S. Constitution, 4.
Chemistry, 5.
Horticulture, 5.
Entomology, 5.
Fiction, 5.
Botany, 5.

P. M.—Chemical Lab., 5.
Entomological Lab., 5.

Note—Students in Senior class may elect fifteen hours of work a week as directed by the professor in charge of the department.

A brief outline of the work in Horticulture and Botany is given in the following paragraphs:

HORTICULTURE.

The study of Horticulture is begun in the Sophomore year. The course consists of two terms of required work and three that are elective.

Principles of Plant Culture.—Required in the winter term of the Sophomore year. Includes a discussion of soils, cultivation, fertilization, moisture, heat, cold, etc. The propagation of plants is discussed at length. This includes propagation by seeds, cuttings, layers, buds and cions. The latter part of the term is devoted to a study of the principles of vegetable gardening.

Pomology.—Required in the fall term of the Junior year for agricultural students taking Horticulture. The class-room work consists of a study of orchard soils and their preparation, when to plant, trimming the trees, choice of varieties; cultivation, fertilization, pruning and spraying; harvesting and marketing. Each

of the fruits that are commonly grown in the State is considered more or less in detail as its importance demands.

The latter part of the term is devoted to a study of the principles of crossing, hybridizing and plant breeding.

During one half of the term the students work two hours each afternoon in the laboratory. Here they are given practice in making cuttings, potting plants, mixing soils and general greenhouse work; budding, grafting, making the various spraying mixtures, etc. Then a study is made of the different fruits that are grown in the State. Fresh specimens are provided for this purpose and a study is made of the trees in the orchards as time permits.

Plant Physiology.—The study of plant physiology as related to the practical operations of horticulture is designed to give the student an understanding of why certain things are done and how the results are attained. The subject is considered from the horticulturist's standpoint; with a knowledge of the minute structure of plants the student is ready to understand how roots, stems and leaves perform their work, and to give a scientific explanation of the various horticultural operations. Elective in the winter term of the Junior year.

Floriculture.—One half term for women in the winter term of the Junior year.

A brief survey is given of the principles of landscape gardening as applied to home making. The subject of flowers, trees and shrubs suitable for home decoration in Colorado is discussed and hints are given for the best methods of growing them.

Thesis and Literature of Horticulture.—A subject is chosen under the direction of the head of the department which will require original investigation. After the investigation is completed an account of the experiments must be written and be presented as a graduating thesis.

While the work is in progress an opportunity will be given the student to become familiar with the literature of horticulture. Elective in the fall term of the Senior year. Five hours.

Evolution in Cultivated Plants.—A study of the development of plants; the cause of variation in plants and the bearing of

the development of plants under cultivation upon the philosophy of evolution. Elective in the spring term of the Senior year. Five hours.

BOTANY.

Elementary Botany.—Spring term of the second sub-freshman year. For all students who have not had high school Botany. This embraces a study of seeds and seedlings, roots, stems, buds, leaves, flowers and fruit. During the latter part of the term a short time is devoted to the classification of plants.

Anatomy and Morphology.—The work in this course is general and is designed to give the student a general survey of the subject. A study is made first of the lower forms of plant life. Compound microscopes are used when needed.

Required of all agricultural students in the fall term of the Freshman year. Ten hours per week.

Plant Physiology.—A study of the different organs of plants. This is a continuation of the previous term's work. Ten hours per week. For all agricultural students in the winter term of the Sophomore year.

Experimental Physiology.—An elementary study of the life processes of plants. The student performs experiments with simple apparatus which illustrates the function of the different organs and substances of which plants are composed. Six hours. Required of agricultural students in the winter term of the Junior year.

General Bacteriology.—A study of the nature of bacteria and their relation to farm life. Elective for agricultural students in the fall term of the Senior year. Five hours.

Fungi.—The diseases of fruits and farm crops common to the state are given special study. Elective for agricultural students. Winter term, Senior year. Five hours.

Forestry.—The elements of Forestry. Elective in the spring term of the Senior year for agricultural students. Five hours.

VETERINARY SCIENCE

COURSE OF STUDY.

For course of study for Freshman and Sophomore years see page 39.

JUNIOR YEAR.

FALL TERM.

Feeds and Feeding, 4.	}	P. M.— $\frac{1}{2}$ Stock Judging, 10.
Chemistry, 5.		$\frac{1}{2}$ Chemistry, 10.
Comparative Anatomy, 3.		Clinics, 5.
Veterinary Medicine, 3.		

WINTER TERM.

Chemistry, 5.	}	P. M.—Chemical Lab., 10.
Materia Medica, 3.		Clinics, 5.
Theory and Practice of Veterinary Medicine, 3.		
Physiological Botany, 3-2.		

SPRING TERM.

Chemistry, 5.	}	P. M.— $\frac{1}{2}$ Chemical Lab., 10.
Animal Parasites, 1.		$\frac{1}{2}$ Clinics, 10.
Obstetrics, 4.		
Theory and Practice of Veterinary Medicine, 5.		

SENIOR YEAR.

FALL TERM.

Feeds and Feeding, 5.	}	P. M.—Dissections, 4.
General Pathology, 5.		Bacteriology, 6.
Bacteriology, 5.		Clinics, 5.

WINTER TERM.

Animal Breeding, 5.	}	P. M.—Histology, 4.
Political Economy, 3.		Embryology, 6.
Therapeutics, 3.		Clinics, 5.
Evolution, 1.		
Histology, 1.		
Embryology, 2.		

SPRING TERM.

Operative Surgery, 5.	}	P. M.—Clinics, 10.
U. S. Constitution, 4.		
Principles and Practice of		
Veterinary Surgery, 5.		

Veterinary Science has within the last decade assumed a wide and important sphere of usefulness; formerly it implied simply the treatment of domesticated animals for the common accidents and ailments, for reasons wholly pecuniary or humanitarian, and incidentally furnished the most unhampered opportunity for the exercise of superstition and the practice of charlatanism. Now it has come to be recognized as a true science, with importance second to none, as it deals more directly with contagious diseases and their relation to the public health.

The assumption of this new role is coeval with, and the inevitable consequence of, the advent of the germ theory of disease. Micro-organisms which are responsible for our many ills, must be studied in the lower animals as well as in man, for here we find them in the greatest variety and virulency.

It cannot be denied that prophylaxy belongs to the broad field of comparative medicine, and that its two branches, human and veterinary, are inseparable. This bond of inseparable usefulness in the protection of the public health has been sealed by the anti-toxin principle of serum therapy. The immunizing of animals against fatal contagious diseases; the certain detection of latent diseases which cannot be known by physical symptoms, and their early isolation or destruction before they have spread disease germs among their kind, or as in many cases to the human. Also the cure of some diseases and the immense possibilities yet in store by the administration of repeated doses of the attenuated virus; the prevention of disease, which has long been in vogue to a limited extent, by an early administration are phases of the role of Veterinary Science of to-day, and afford us a brief glimpse of its possibilities.

Livestock being one of the principal industries of this State, it is the purpose of Veterinary Science in this institution not only to give a most thorough course of instruction but to stand for everything that can advance this ever-increasing and important industry. More specifically its province lies in the direction of the handling and treatment of livestock from the standpoint of disease, prophylaxy and treatment.

The curriculum is so arranged that students from the other courses can elect Veterinary Science at the beginning of the Junior year, and those of the course in Agriculture can elect it in part during the Senior year.

Dissections and Clinics.—The well-equipped dissecting rooms, and the free clinics afternoons of every term after the Freshman year, furnish abundant material for practical work. This work is under the immediate supervision of Dr. Glover. The College being situated in an extensive stock-growing district is especially favored in this respect. Not only horses, but all species of animals are brought in for treatment.

Besides this the College herd, which every season is being greatly improved and enlarged, is one of the finest in America, and of itself furnishes ample material for classroom demonstration, and requires the constant attention of the Veterinarian.

Operative Surgery.—It is in this line of surgery that the Veterinarian has more to do than in any other.

Operations of every description are performed for the benefit of the class at the hours of free clinics throughout the entire course. The more advanced students are required to perform ordinary operations such as would be found necessary in Veterinary practice.

The subject is also taught by text-book in the Senior year.

General and Special Pathology.—This work is taken up during the Senior year, after a thorough course in Physiology and Histology. The subject is taught by text-book, supplemented by lectures. First the elementary morbid processes generally, macroscopic and microscopic inflammation and its accompanying phenomena, infiltration, resolution, thrombosis, embolism degeneration, atrophy, hypertrophy, necrosis, gangrene, hyperaemia, hemorrhage, tumor formations, etc.

Later the study of special pathology is taken into consideration, that is, the diseases peculiar to particular tissues or organs.

Materia Medica.—This is taught throughout the Junior year and in the first term of the Senior by text-book (Finlay Dunn) with samples of the drugs exhibited to the students, who are required to inspect and handle them until they became intimately acquainted with the leading properties of all the principal drugs.

Obstetrics.—This subject is taken up during the last term of the Senior year, and is taught by two lectures a week. Fleming's **Obstetrics** is used for reference. It includes a review of the reproductive organs, gestation, dystocia, accidents during parturition, obstetric operations, hygiene of pregnant animals, etc.

Anatomy of the Domesticated Animals.—This subject is treated throughout the Junior year by text-books (Chauveau) and supplemented by demonstrations from mounted skeletons, prepared specimens, charts and dissections. During the last term of the Junior year special work in comparative anatomy is given under the direction of Prof. C. P. Gillette.

Therapeutics.—This subject is taught by text-book during the Senior year. It embraces in the case of each particular drug pharmacy, physiological action, therapeutical action, toxic action, antidotes, administration, dosage, antagonists, and incompatibles.

This course is supplemented by prescription writing, which is begun earlier in the course in the study of *Materia Medica*.

ZOOLOGY

(See page 39 for Course of Study.)

Physiology.—In the winter term of the first Sub-Freshman year physiology is taught for one-half term to all students who can not pass a satisfactory examination in the subject, or present acceptable grades from accredited high schools.

During the fall and winter terms of the Sophomore year, higher physiology is taken by the students in courses in Agriculture, Domestic Science, and Veterinary Science. **Martin's Human Body** will be used as a text book in connection with lectures and demonstrations in the classroom. There will be five recitation periods a week during both terms. Prerequisite, Sub-Freshman physiology.

For teaching this subject the department is well equipped with human skeletons of infant and adult, articulated and disarticulated, also a **papier mache** manikin of the entire human body with the organs colored as in life and removable, and enlarged models of special parts as eye, ear, larynx, brain, etc.

Zoology.—This subject is taught to those taking courses in Agriculture, Domestic Science and Veterinary Science, during the fall term of the Sophomore year. There will be five morning periods and five afternoon laboratory periods each week. Much stress is placed upon the laboratory work where the student sees and studies typical forms of the different groups of the animal kingdom, beginning with the lowest and simplest and later taking up those that are higher in structure and development. In order to develop definiteness and accuracy of observation, many carefully labeled outline drawings are required. While form, size and color are matters of more or less interest in themselves, the chief object is always to lead the student to see the relations existing between form and function and between the organism as a whole and its environment.

The department is well provided with microscopes, dissecting instruments, charts, models and has a large collection of invertebrate animals in the College museum.

Entomology.—This subject is taught five times a week during the fall term of the Sophomore year. The aim will be to give

the students a good general knowledge of the structure, habits and classification of the insect kingdom, and a special knowledge of the habits of the more injurious species and the remedies that may be used to destroy them or prevent their depredations. There will be also five laboratory periods a week of two hours each. In the laboratory the student will study typical examples of the different orders of insects and will be required to make drawings of important parts. Some time will be devoted to field excursions for the purpose of observing insects under natural conditions. Each student will also be required to make a small collection of insects and properly classify and mount them for permanent preservation.

This study is required of students in the Agricultural and Ladies' courses.

In the spring term of the Junior year entomology is again offered five times a week in the morning to those students taking the course in horticulture. During this term considerable attention will be given to systematic entomology. The large college collection of mounted insects is available for use in this work. Special attention will also be given to insects injurious to fruits.

In the winter term of the Senior year those students who wish to specialize in entomology will be given an opportunity to elect entomology five times a week in the morning.

For this work the College is equipped with every facility for collecting, rearing and mounting specimens. As a collecting ground, Colorado is unexcelled, and there is an insectary and apiary in connection with the department. Also a mounted collection of insects numbering over 50,000 specimens, among them a large number of types, particularly in the orders Hemiptera, Hymenoptera and Orthoptera.

Comparative Anatomy.—During the fall term of the Junior year all students taking the Veterinary course are required to put in three morning periods a week in a comparative study of the skeletons of man and the domestic animals.

Animal Parasites.—One lecture a week in the spring term of the Junior year will be given to students taking the course in Agriculture or Veterinary Science. The principal parasites, internal and external, attacking domestic animals, will be consid-

ered, also the remedial and preventive measures that may be employed against them.

Histology.—During the winter term of the Senior year, histology is required of students in the Agricultural and Veterinary courses. The subject is taught by means of one lecture and two laboratory periods a week throughout the term. So far as possible, the tissues are hardened and sectioned for the student, but he is required to prepare mounts of various tissues for study. The department is provided with compound and dissecting microscopes, microtomes, books of reference, and a large series of permanently prepared microscope slides, showing the tissues of the various organs in vertebrate animals, and other needed equipment for the work.

Embryology.—This subject is taught during the winter term of the Senior year to students in courses in Agriculture and in Veterinary Science. There are two morning lectures and three laboratory periods devoted to the subject each week. Instruction will be given in the general principles of development and inheritance which will be followed with a comparative study of the development of the frog, chick, and man. The subject will be illustrated by wall charts, wax models, and especially prepared microscopic mounts. In the laboratory the student will study the structure of germinal tissue, maturation, fertilization and segmentation of the ovum, and the formation of the germ layers and will watch the development of the eggs of the frog and chick.

Evolution.—The general principles underlying the development of organic beings, the laws of inheritance, and the history of the evolution idea, will be discussed in a series of lectures given once a week during the winter term of the Senior year. Illustrated by the stereopticon. Required by students taking Veterinary, Agriculture and Ladies' courses.

MECHANICAL ENGINEERING

FRESHMAN YEAR.

FALL TERM.

College Algebra, 5.	}	P. M. $\frac{1}{2}$ Mechanical Draw- ing. $\frac{1}{2}$ Shop.
Rhetoric, 5.		
Carpentry and Joinery, 2.		
Drawing, 3.		

WINTER TERM.

Trigonometry, 5.	}	P. M.—Shop.
English Literature, 5.		
Mechanical Draw'g (Lettering) 2.		
Rhetoric, 3.		

SPRING TERM.

Physics, 5.	}	P. M.— $\frac{1}{2}$ Physical Labora- tory. $\frac{1}{2}$ Surveying.
Surveying, 5.		
College Algebra, 5.		

SOPHOMORE YEAR.

FALL TERM.

Mechanics, 5.	}	P. M.—Shop.
Analytics, 5.		
Drawing, 2.		
Descriptive Geometry, 3.		

WINTER TERM.

Differential Calculus, 5.	}	P. M.—Shop.
Workshop Appliances, 2.		
Drawing, 5.		
Descriptive Geometry, 3.		

SPRING TERM.

Integral Calculus, 5.	}	P. M.—Shop.
Special Machines or Hydraulics,		
Drawing, 5.		

JUNIOR YEAR.

FALL TERM.

Principles of Mechanism, 5.	}	P. M.—Chem. Laboratory, 3
Strength of Materials, 5.		Strength of Mat.
Chemistry, 5.		Laboratory, 2.

WINTER TERM.

Chemistry, 5.	}	P. M.—Chemical Laboratory, 5.
Drawing, 2.		
Machine Design, 3.		
Steam Boilers, 5.		

SPRING TERM.

Steam Engine, 5.	}	P. M.—Shop.
Metallurgy, 3.		
Special Machines or Hydraulics, 5.		
Pumping Machinery, 2.		

SENIOR YEAR.

FALL TERM.

Gas and Oil Engines, 2.	}	P. M.—Shop.
Steam Engine Design, 3.		
Transmission of Power, 3.		
Thermo-Dynamics, 5.		
Compressed Air Machinery, 2.		

WINTER TERM.

Thermo-Dynamics, 5.	}	P. M.—Shop.
Heating and Ventilation, 3.		
Railway and Mechanical Engineering, 2.		
Contracts and Specifications, 1.		
Seminar, 1.		
Engine Design, 3.		

SPRING TERM.

Thesis, 3.	}	P. M.—Engineering Laboratory.
Engineering Design, 2.		
Electrical Machinery, 3.		
Railway Mechanical Engineering, 2.		
Constitution of the U. S., 4.		
Seminar, 1.		

General Statement.—This course prepares students for the profession of Mechanical Engineering. It teaches the general principles of engineering and unites theoretical work and practical research. Instruction is imparted by means of text-books, lectures, illustrations, and experiments in testing materials, machines and motors.

As the course in Mechanical Engineering is, in part, designed to enable the student to solve those problems relating to the generation and transmission of power and its application to machines, much of his time is spent in the drawing-room, workshops and experimental laboratory. The studies of this course, which are in common with other courses, are enumerated and described elsewhere in this catalogue; the others are:

Drawing.

Carpentry and Joinery; also wood-working machinery.

Pattern making and foundry work.

Forge work.

Machine and vise work in metals.

Principles of mechanism.

Strength of materials.

Boilers.

The steam engine.

Machine design, machinery and mill work.

Drawing.—Free hand copy and dictation; free-hand model and object drawing; light and shade; geometric problems, orthographic and isometric projections and projection of shadows, development and intersection of surfaces.

Free-hand drawing gives students facility in representing objects clearly upon paper. Free-hand exercises gradually lead up to making sketches of machines and parts of machines which are afterwards reproduced with instruments in the form of working drawings.

Students are taught how to make careful tracings from their drawings, and from these tracings how to make copies by the blue print process; the black print process is also taught. Considerable copying of machinery from good examples is required; there are in the drafting room for this purpose, working drawings from prominent manufacturers, and from the engineering department of the United States Navy.

The students receive careful instruction in lettering working drawings, so that in addition to being skillfully lettered, they shall be easily read and understood. Much time is spent at the drafting table, in designing machines. In some instances machines are built in the College shops from these designs.

Carpentry and Joinery.—The classroom work, by means of text-books and lectures, takes up the study of the cutting edge of various wood-working tools and machinery and the means of keeping them in good order; an explanation of the construction of each tool and its manner of acting on the material, the methods of determining how to select materials best suited to different kinds of work, the manner of laying out the work, cutting speed of tools, etc.; the shrinkage and warping of woods and the different modes of sawing into lumber and the various forms and uses of framing and other joints.

For the purpose of class-room illustration, the Department possesses a good collection of models of the various joints used in timber work in building construction. The strength of various timber joints used in building construction is considered.

Pattern-Making and Foundry Work.—The most advantageous forms of patterns are discussed with regard to the proper distribution of the metal and the best form for moulding in the foundry, the proper construction of core boxes and the various materials from which they may be made. Core mixtures, core making, baking and finishing, receive careful consideration. The subject of core ovens is considered with reference to their form, construction and management. Various types of cupola furnaces are discussed, methods of lining, introduction of the blast, the placing of tapping and slag holes, different forms of tuyeres.

Forge Work is taught by lectures on iron and steel, and especially with reference to their management in the fire and in the processes of tempering, hardening and annealing.

Machine Work and Vise Work are taught in a similarly thorough and careful manner.

Modern Machine Shop Methods and Appliances.—This subject is taught in the class-room by means of text-books and lectures. The aim is to familiarize the student with up-to-date

methods under various conditions of practice and with such machines and appliances as do not come under his immediate observation in our shops.

Principles of Mechanism are studied with reference to the combinations of which machines are composed, and the study of designs for the communication of motion by means of gears, belts, links, etc., methods of designing parallel motions, quick return motions and cone pulleys. The adaptation to the formation of gear teeth of the involute, the epicycloid, the logarithmic spiral, and other curves, form an important feature in this course.

The Department possesses a large number of models necessary for a presentation of the subject. In many cases they were constructed by the students from their own designs.

Strength of Materials is considered by examining the physical properties of the various materials used in construction.

Besides the usual tests of beams, columns and other structural pieces, tests are made of chains, ropes, cables, solid bars and welded bars of iron; force required to drive various kinds of nails; holding power of nails and screws, and strength of bricks, stones, marble, etc.

Machine Design is taken up for one term, and the students make designs for screws, bolts, nuts, gears, and complete machines, such as arbor presses, drill presses, lathes, engines, etc. In this connection the students make use of classroom notes, reference books, and notes and sketches made by themselves from their experimental work and their reading.

Boilers.—The various forms are carefully studied from the best authors.

The College possesses four steam boilers, to which the students have access, as they also have to many boilers owned by outside parties near the College.

The Department has samples, obtained from different sources, of burned and torn sheets from exploded boilers; burned and pitted flues; choked and corroded pipes and fittings, and a large collection of parts of boilers showing conditions incident to boiler management. Injectors, pumps, condensers, feed-water heaters and economizers receive special consideration and are thoroughly investigated.

Chimney draft and mechanical draft are studied and compared with regard to their relative efficiencies.

The Steam Engine is studied in its various forms in general and in detail. The Department has a pair of indicators and all appliances necessary for complete engine tests. Careful attention is given to the study of valves by means of the Zeuner and Bilgram diagrams. Compound and condensing engines are studied with reference to steam distribution and the proper proportion of the various parts. The thermodynamics of the steam engine is studied in the Senior year.

There are four steam engines at the College which belong to this Department.

The Department also has two first-class steam pumps and an inspirator. These, with what has already been named, form a desirable equipment for the use of the students.

Three of the steam engines are provided with Prony brakes. There has been added a model to be used in studying the steam engine. It shows the working of a common slide valve, a riding valve, and the Corliss valves under varying conditions. It was made for the Department, and enables the students to get a clear conception of the working parts of the steam engine, especially the valve gearing.

Machinery and Mill Work receive attention, methods of arranging shops and machinery are investigated, and the transmission of power for shop purposes is studied. Important engineering developments, as they occur, are discussed in the classroom in connection with the studies to which they relate.

Pumping Machinery.—A study of pumps of different styles and sizes.

Steam Engine Design.—It is the endeavor to have this work conform to the best modern practice, and to supplement the instruction given. Blue prints of drawings furnished by prominent manufacturers are used, and show the prevailing forms of engines in use.

Gas and Oil Engines.—Theory and construction of gas and oil engines, ignitors, governors, etc.

Compressed Air Machinery.—The study of motors, compressors, hoists and various air tools.

Transmission of Power.—A study is made of the various forms of power transmission in shops and factories.

Thermodynamics.—This includes a study of the laws of thermodynamics as applied to the steam engine.

Heating and Ventilation.—This work includes the study and design of various forms of heating and ventilation in common use in modern buildings.

Railway Mechanical Engineering.—The design and construction of locomotives, the operation of the air brake and the study of different forms of signals and switches.

Specifications and Contracts.—Complete working drawings for some particular problem are made, the specifications are made, and a form of contract for such a problem is carefully worked out.

Constructive Engineering.—The design and arrangement of power plants, shops and factories.

Electrical Machinery.—This work embraces the study of various forms of electrical machinery, the adaptability for different purposes, the arrangement of power plants, light plants and the placing of motors for running single machines.

Metallurgy.—Under this head is taken up the study of combustion, fuels, furnaces and refractory materials. Especial attention is given to the metallurgy of iron and steel.

Seminar.—The Senior students in the Winter and Spring terms use one hour per week for the consideration of articles of interest appearing in the current technical papers and magazines.

Thesis.—Each student is assigned a subject which he is to investigate and upon which he must write a satisfactory thesis. He is expected to rely upon himself as much as possible.

Visits of Inspection.—During the Senior year the students make visits of inspection to the large industrial establishments

of the State in charge of an instructor. These visits are intended to be of educational value, and to supplement the work done at the College, and to show the students the practical application of many things taught in the classroom.

Students are expected to read the current technical literature, and for their accommodation the College library is well supplied with the best engineering papers and magazines.

The shops in connection with the Mechanical Engineering Department are places where principles and operations may be more readily laid hold of and permanently acquired, than any bare demonstration of the classroom could accomplish.

The shop instruction is divided into courses, and in each course are given, in connection with the work, an explanation of the construction of each tool and its manner of acting on the material, the methods of determining how to select materials best suited to different kinds of work, the manner of laying out work, cutting speed of tools, etc.

COURSE OF LABOR.

Bench work in wood.....	13 weeks
Wood-turning	13 weeks
Pattern-making	13 weeks
Moulding and casting	13 weeks
Iron and steel forging.....	13 weeks
Machine work in metals.....	13 weeks
Vise work in metals.....	13 weeks

Bench Work in Wood.—This course consists of exercises with the different wood-working bench tools, so arranged in a graded series as to embrace the manipulation of the tools in their various applications.

First, the use of planes in joining, smoothing and getting the piece out of wind, lining off, and the use of saws in cutting across and with the grain, and keeping to line.

Then follow exercises in making a halved splice, splayed splice, keyed splice, open dovetail mortise and tenon joint, open dovetail joint, blind dovetail joint, lap joint, dowel joint, small newel post and hand-worked rail, panel door, roof truss, box, carpenter's trestle. Instruction is given in making glued joints, in-laid and scraped surfaces.

Students usually work from drawings. Cases, benches, boxes, foundry flasks and a variety of other useful articles are made.

Machine Work in Wood.—In connection with this course, with the use of tools, is given the most rapid and economical method of selecting and preparing the wood for the machine. There are given examples of straight turning; cutting in and squaring off; concave, convex and compound curves; handles for chisels and other tools, and examples in chuck work in separate and combined pieces.

This work is so planned that much of it, when completed, forms some part of a machine or other product. A five-horse power vertical steam engine complete in all its details, a number of drafting tables, boring bars, gears, vises, bells and small tools for use in the shop, serve to illustrate the practical use to which shop products are put.

Pattern-Making and Foundry Work.—After becoming familiar with bench and machine work in wood, an application of both is made by constructing patterns with due regard to shrinkage, draft and the best method of constructing the pattern so that it causes the least amount of trouble in the foundry. There are given examples of plain work; core work; pulley work; pipe work; gear work; core boxes, their use and construction.

After the patterns and core boxes have been constructed, they are taken to the foundry-room by the students, where moulds and cores are made and castings are made in iron, brass, bronze or aluminum.

In the foundry, the students are taught how to charge and manage the cupola, each student pouring for himself the hot metal for the molds he has made.

The management of the brass furnace and core oven is also taught.

Castings of iron, brass and other metals and alloys are made for vises, drafting-tables, dynamos, steam engines, engine lathes and other things needed.

Forge Work.—Students are carried through a series of carefully graded exercise in both iron and steel, working from drawings in each instance. Many pieces are made which are put to a

practical use. Lathe, planer and shaper tools are made by the students in this room; also cold chisels, center punches, smith tools, brass furnace crucible tongs, skimmers and all bolts, braces and such other iron and steel work as may be needed.

Machine Work in Metal.—The care and management of tools and their construction are taught.

Cutting speed of tools and proper angle of cutting edge for different purposes and different metals; centering and straightening work; straight turning and squaring; boring; making and fitting joints; chuck work; screw cutting, inside and outside; drilling, tapping and reaming; boring with boring bar and use of center rest; polishing and finishing; hand-tool work. Every shop exercise is graded and marked in the same manner as a classroom recitation, each piece of work being regarded as of educational value.

Practical Mechanics.—For those whose time and means are limited, a short course in practical mechanics is provided. This course covers practically the work of the Freshman and Sophomore classes.

The work has for its object a systematic and progressive education in the use of tools and materials, combined with as much theoretical knowledge as may be deemed necessary to explain the principles involved. It does not teach special trades or manufacture salable articles; to do so would require that the student be kept on the kind of work that he could do best, and thus prevent him from acquiring broad and liberal ideas of other methods. So, without teaching any complete trade, the mechanical principles of many are gained. This does not necessarily mean that the student becomes sufficiently expert to compete with the skilled mechanic, but that a knowledge of how a tool or machine should be used, and the manner of laying out work for it, are thoroughly taught.

Should circumstances be such as to cause the student to enter manufacturing, his ideas have been broadened by his training, and he will more readily grasp anything new that may come up in his business, or, should he take up farming, he will with greater ease be able to understand the mechanical principles and workings of his machinery, and know how to keep it and his buildings in proper repair.

Tool-Room System.—There is a well-arranged tool-room, fitted up with a check system designed to accustom students to order and neatness and the names of the tools in use.

Theory and Practice.—Attention is called to the combination of the theoretical and practical instruction here offered. Thorough and careful instruction is given with, or is supplemented by, the most practical application of the same in all ways. In every instance where it is possible the work of the classroom is supplemented by work in a corresponding laboratory, where the experimental work is performed according to the latest and most approved methods with the best machines and materials. The practical applications of mechanical theories broaden the conceptions of these truths and make them easier to grasp and more easily retained; by studying the construction of machines the abstract mathematical laws are better understood and their significance becomes more evident.

CIVIL AND IRRIGATION ENGINEERING

FRESHMAN YEAR.

FALL TERM.

College Algebra, 5.	}	P. M.— $\frac{1}{2}$ Mechanical Draw- $\frac{1}{2}$ Shop.
Rhetoric, 5.		
Carpentry and Joinery, 2.		
Drawing, 3.		

WINTER TERM.

Trigonometry, 5.	}	P. M.—Shop.
English Literature, 5.		
Lettering, 2.		
Rhetoric, 3.		

SPRING TERM.

Physics, 5.	}	P. M.— $\frac{1}{2}$ Physical Labora- tory. $\frac{1}{2}$ Surveying.
Surveying, 5.		
College Algebra, 5.		

SOPHOMORE YEAR.

FALL TERM.

Field Camp, 2 weeks.	}	P. M.—Surveying.
Mechanics, 5.		
Analytics, 5.		
Higher Surveying, 5.		
Photography, 1.		

WINTER TERM.

Differential Calculus, 5.	}	P. M.—Draughting.
Mechanics, 5.		
Irrigation Engineering, 5.		

SPRING TERM.

Integral Calculus, 5.	}	P. M.—Field Work.
Hydraulics, 5.		
Railroad Engineering, 5.		
Seminar, 1.		

JUNIOR YEAR.

FALL TERM.

Field Camp, 2 weeks.	}	P. M.—Chemical Laboratory, 3. Field Work, 2.
Strength of Materials, 5.		
Chemistry, 5.		
Irrigation Development and Laws, 5.		
Seminar, 1.		

WINTER TERM.

Chemistry, 5.	}	P. M.—Chemical Laboratory.
{ ½ Materials, of Engineering, 5		
{ ½ Trusses and Bridges, 5.		
{ ½ Meteorology, 5.		
{ ½ Canal Management, 5.		
Seminar, 1.		

SPRING TERM.

Hydraulics, 5.	}	P. M.—Field Work.
Trusses and Bridges, 5.		
Geology, 5.		
Seminar, 1.		

SENIOR YEAR.

FALL TERM.

Field Camp, 2 weeks.	}	P. M.—Electrical Laboratory.
Hydraulics, 5.		
Logic, 3.		
Electricity, 5.		
Mineralogy, 2.		
Seminar, 1.		

WINTER TERM.

Civil Engineering, 5.	}	P. M.—Design.
Engineering Design, 5.		
Political Economy, 3.		
Specifications and Contracts, 2.		
Seminar, 1.		

SPRING TERM.

Thesis, 5.	}	P. M.—Engineering.
Civil Engineering, 5.		
Seminar, 1.		
Constitution of the U. S., 4.		

This course is designed to give the students a good foundation, both theoretical and practical, in civil engineering.

As one of the opportunities for usefulness in Colorado and other Western states is along the lines of irrigation, special attention is paid to hydraulics and to the problems of irrigation.

The Colorado Agricultural College was the first to offer a course in irrigation engineering. The present course is designed to give its graduates the inclination and knowledge necessary to take an active part in irrigation engineering and management.

Especial stress is laid upon field work. Every student who completes the course is intended to have a working knowledge based on long and varied practice with all the ordinary instruments of surveying. In addition to the field practice through the college year, the whole class is taken into the mountains and the whole time given to field practice under actual conditions. In such exercises classes have run lines of levels and transit lines to the top of Long's Peak, an elevation of 14,275 feet. The members of the classes are required to check their work within limits of the most careful work.

The students are also exercised in the use of current meters in measuring water, gauging canals so that they may be prepared to settle some of the vexing problems connected with irrigation.

The College is well supplied with instruments, having six current meters, eight compasses, eight levels, eight transits,

sextants, plane tables, barometers, planimeters, comptometers, odometers, with necessary chains, tapes, rods, etc., for field practice.

The department also has a camping outfit for use in the field.

Mathematics.—In Mathematics the students, when entering the Freshman class, are expected to be prepared in geometry and in algebra to quadratics. Two additional terms are devoted to algebra, one to trigonometry, with a view to practice in its application and in computations. Analytical geometry and differential calculus are completed in the Sophomore year, thus laying a foundation for the mechanics of materials, hydraulics, and other technical studies of the subsequent years.

Drawing.—Orthographic projection, shades, shadows and lettering are taken up in the Freshman and Sophomore years. In connection with field work, designing plats, plans and working drawing, giving considerable practice in draughting, are required.

Chemistry.—Two terms in which chemistry, including general chemistry and elements of inorganic chemistry with laboratory work in blow pipe analysis and qualitative practice are required in the Junior year.

Physics.—A preliminary high school course in physics is pre-supposed. This is continued by a term in Freshman year given to heat and electricity. Two terms in the Sophomore year are given to mechanics. Later in the course two terms which may be considered as a part of the study of physics are given to hydraulics, and a term in the Senior year is given to applications of electricity.

Surveying.—In the Freshman year land surveying and leveling, and the use of the compass and level as instruments of surveying are taught. The elements of city surveying, topographic, geodetic and hydrographic surveying with theory of instruments used are included in the study of higher surveying in the Senior year. Abundant field practice in the neighborhood surrounding the College gives varied opportunities for field work.

Field Work.—Six weeks are required in practice in the Freshman year. This is supplemented by much other required

work of the Sophomore, Junior and Senior years. An important feature of the field work is the practice camp. This is begun one week prior to the opening of the Fall term, and extends through the first week of the Fall term, described more at length later.

Geology.—Stratigraphical geology and physiography is enforced by the abundant object lessons in the vicinity.

Mineralogy.—This is confined more especially to the study of rocks as adapted to engineering construction.

Trusses and Bridges.—The theoretical study of the distribution of trusses in bridges and the methods of calculating them, both numerically and graphically. Much time is given to the actual solution of problems. The study is aided by working drawings and examples of such structures.

Strength of Materials.—The first term of this study is more especially given to the mechanics of materials, followed later by a study of the materials of engineering, as brick, stone, concrete, soil, etc., their peculiarities and advantages. The department has a testing machine of 50,000 pounds capacity, and also a cement testing machine of 1,000 pounds testing capacity, to use in laboratory practice.

Hydraulics.—The study of hydraulics from the theoretical side takes one term. This extends to the laws of gravity as affecting water, principles governing measurements through orifices, over weirs, channels, etc., the loss of head through pipes, etc. Special stress is given to those operations which have application to the measurements and methods applicable in irrigation.

Agricultural Hydraulics.—In this course the relation of water to the growth of plants as a basis for intelligent irrigation, is considered. The amount of water used by plants; the most favorable amount of moisture in the soil, and the best depths of moisture, and other conditions favorable to plant growth. The methods and philosophy of irrigation are discussed at length. In another term subsequently, time is given to theoretical hydraulics and experimental investigation. In addition to the current meters, apparatus, and other equipment in this

line belonging to the College, the canals and reservoirs on a large scale in the vicinity afford a means of measurement to an extent which no academic equipment could furnish. The College pipe line which brings water from a spring four miles distant, was equipped with piezometer connections at short intervals during construction so that it is an accessory to our hydraulic apparatus as a means of testing friction in pipes. We also have a siphon sixteen inches in diameter and 1,000 feet long and a pipe twelve inches in diameter, several thousand feet in length also adapted for study of this character. The hydraulic laboratory also has an equipment of scales, weirs, etc., but the most valuable equipment for the work is found in connection with the neighboring canals. The hydraulic investigations of the corresponding section of the Experiment Station in the different parts of the State also furnish a large amount of data from actual investigation for the use of the more advanced students who are sometimes given opportunities to take part in these investigations.

Railroad Engineering.—A term in the Sophomore year is given to the question of tunneling and earthwork, trestling, railroad location and the engineering problems of railroads.

Meteorology.—A short course in which it is intended to give methods of observation of meteorological phenomena, a knowledge of the laws of storms, both general and local, and their changes, is taken up in the Winter term of the Junior year.

IRRIGATION.

Besides the instruction in hydraulics, all of which is of practical import to the engineer or to the agriculturist in Colorado, several terms are devoted to the study of the various phases of the Irrigation question. In the Winter term of the Sophomore year the study of Irrigation Engineering is taken up. The construction of flumes, location and construction of canals, head-gates and other structures are considered. In the Junior year a term is given to the consideration of the development of irrigation, and to the laws of irrigation. This is considered, but with the development of the idea that the present condition of irrigation institutions is an evolution from conditions of different com-

munities, in that our laws have been made to meet the conditions as they have arisen.

Canal Management.—In this course it is intended to discuss the problems that arise with canal superintendents and water commissioners whose duties lie in connection with the distribution of water, hence more especial attention is given to problems that concern such officials. Both of these courses are intended to give the student an intelligent knowledge of the problems of such duties as qualify technically for taking part in administration in the distribution of water, when acting as water commissioners or canal superintendents. In order to derive the greatest benefit, these two courses should be taken in connection with the study of hydraulics as included in the other courses.

In the course called Civil Engineering, in two terms of the Senior year, it is intended to include some of the other branches necessary for engineering not included in previous courses. A fuller discussion of road engineering and road making, of city engineering, including construction of city water works, and of other general problems of engineering, will be entered into in this course. In the Winter term of the Senior year considerable time is given to engineering design. It is intended in this course that practical problems of designing and laying out of canals and reservoirs, plans and estimates for flumes, headgates and other constructions shall be worked out. The problems given to students will vary from year to year. Other things being equal, preference will be shown for those problems the solution of which will be of immediate benefit. The intention, however, is to require the students to design and make estimates complete for some particular engineering construction, whether water works, canals, or dams, with the belief that the complete solution of such problems will develop the power of the student to manage other similar problems.

The study of Specifications and Contracts, in the Senior year, will take up the essential principles of law involved in contracts. There will be discussion on the characteristics of written and implied contracts. The forms of contracts and the general conditions necessary for correct interpretation will also be considered.

The seminar of the last few years of the course will for a

portion of the time include more than is ordinarily included in such terms. In the Sophomore and occasionally in the later years, some time will be given to technical literature. The articles in current periodicals will be read and reported upon by the different members of the class and a general discussion will ensue. As they become more advanced in their course more time will be given to discussions of various engineering questions and to the examination of different problems.

Photography.—The ability to use the camera is one of the essential elements in the knowledge of engineering, and a very desirable means of making a record of any kind of work. Each student will be given an opportunity to use the camera and will be given sufficient instruction to understand the principles of photography.

Field Camp.—Each student in the Engineering course reports on Friday, ten days before the opening of the Fall term, for field practice. The benefits of such work have been so marked that this exercise is considered as an essential part of the course and is required of such students after the first year.

In order to remove distracting surroundings as well as to include excellent field opportunities, the classes go far into the mountains. The encampment lasts for two weeks, and is in charge of the Professor of Engineering and competent assistants. For the past two years Estes Park and the vicinity of Long's Peak was selected as affording a variety of topographical conditions; from comparative plains to some of the roughest regions of the Rocky Mountains; with streams and abundant choice for both easy and difficult problems of field work. An additional reason for choice has been that notwithstanding the wildness of the country, the party has been within easy reach of daily mail, telephone, store and physician. Camps were formed at elevations of from 7,500 to 12,000 feet above sea level. Level and transit lines were run to the top of Long's Peak at an elevation of 14,275 feet. While there has been hard work, such as is to be expected and is welcomed by every earnest student. The trips have also been the source of much pleasure. The students returned in vigorous physical condition, prepared for the remainder of the college year. The College supplies part of the permanent equipment. Each student furnishes his bedding and personal needs. The party divides in the expense of transporta-

tion, cook and provisions pro rata. The cost has been about \$5.00 each per week, or about the same as would be the cost in town, excluding equipment.

In the Senior year each student candidate for graduation will be expected to prepare a thesis containing the results of some original investigation on some question pertaining to Engineering or Irrigation.

ELECTRICAL ENGINEERING

FRESHMAN YEAR.

FALL TERM.

College Algebra, 5.

Rhetoric, 5.

Carpentry and Joinery, 2.

Drawing, 3.

P. M.—French, 2.

$\frac{1}{2}$ Mechanical Drawing, 10.

$\frac{1}{2}$ Shop (Wood Room), 10.

WINTER TERM.

Trigonometry, 5.

English Literature, 5.

Mechanical Drawing, 2.

Rhetoric, 3.

P. M.—French, 2.

Shop (Wood Room), 10.

SPRING TERM.

Physics, 5.

Surveying, 5.

College Algebra, 5.

P. M.—French, 2.

$\frac{1}{2}$ Physical Laboratory, 10.

$\frac{1}{2}$ Surveying, 10.

SOPHOMORE YEAR.

FALL TERM.

Mechanics, 5.

Analytics, 5.

Drawing, 2.

Descriptive Geometry, 3.

P. M.—French, 2.

Shop (Forge), 10.

WINTER TERM.

Differential Calculus, 5.

Elements of Electrical Engineering, 5.

Descriptive Geometry, 3.

Drawing, 2.

P. M.—French, 2.

Shop (Machine Room), 10.

SPRING TERM.

Integral Calculus, 5.

Elements of Electrical Engineering, 5.

Drawing, 5.

P. M.—French, 2.

Shop (Machine Room), 10.

JUNIOR YEAR.

FALL TERM.

Principals of Mechanism, 5.
 Strength of Materials, 5.
 Chemistry, 5.

} P. M.—Chemical Laboratory, 6.
 Strength of Materials, 4.

WINTER TERM.

Chemistry, 5.
 Drawing, 3.
 Dynamo-Electric Machinery, 2.
 Steam Boilers, 5.

} P. M.—Chemical Laboratory, 10.

SPRING TERM.

Steam Engine, 5.
 Dynamo-Electric Machinery, 5.
 Telephony and Telegraphy, 5.

} P. M.—E. E. Laboratory, 4.
 Electric Design, 6.

SENIOR YEAR.

FALL TERM.

Electric Light, Power and Distribution, 5.
 Steam Engine Design, 3.
 Thermo-Dynamics, 5.
 Alternators and Transformers, 2.

} P. M.—E. E. Laboratory, 6.
 Electric Design, 4.

WINTER TERM.

Thermo-Dynamics, 5.
 Alternators and Transformers, 3.
 Electric Railways, 3.
 Seminar, 1.
 Engine Design, 3.

} P. M.—E. E. Laboratory, 6.
 Electric Design, 4.

SPRING TERM.

Thesis, 5.
 Constitutional History, 4.
 Seminar, 1.
 Electrical Engineering, 5.
 Electrical Machinery, 3.*

} P. M.—M. E. Laboratory, 4.
 E. E. Laboratory, 6.

*For Seniors of Mechanical Engineering Course.

This course is designed for those who wish to prepare themselves for the profession of Electrical Engineering. It is imperative that the practical engineer should be familiar with the principles of machinery and methods of Machine Construction. For this reason this course contains much that belongs to the Mechanical Engineering Course. The extensive application of electricity to the various industries requires that a course in Electrical Engineering furnish the most thorough instruction in the principles of electricity and magnetism. This instruction is given by means of text-books, lectures and laboratory work.

The department is well equipped with apparatus by means of which electricity and magnetism can be studied experimentally.

Lectures, from time to time, by prominent engineers, and inspection trips to representative power and lighting plants will constitute an important feature of the Department's work.

The studies included in this course, but which are common to other courses, are described in their appropriate places elsewhere in this catalogue. The course of instruction belonging to this Department alone is as follows:

Elements of Electrical Engineering.—General principles and laws of electricity and magnetism, measurements of electric and magnetic quantities, application of these principles, elementary study of the dynamo-electric machine.

Five hours a week during the winter and spring terms, Sophomore year.

Dynamo-Electric Machinery.—The principles, design, construction and operation of dynamos and motors.

Two hours a week during the Winter term, five hours a week during the Spring term, Junior year.

Telephony and Telegraphy.—Methods and instruments employed in telephony, telegraphy and electric signaling. Design and installation of central telephone exchanges, multiplex and wireless systems of telegraphy.

Five hours a week during the Spring term, Junior year.

Electric Light, Power and Distribution.—The design, installation and operation of the various systems of electric lighting. The plant, transmission line, sub-stations, distribution, wiring, etc., are considered.

The utilization of electric energy in machine shops and factory. The best type of motor for any given condition. The different methods of motor drive.

Principles and methods by which transmission and distribution of direct and alternating currents are affected. Voltage and current regulation, etc.

Five hours a week during the Fall and Spring terms, Senior year.

Alternators and Transformers.—The principles and design of alternating current machinery and transformers. Types of transformers, rotary converters, double current generators, insulation, etc.

Two hours a week during the fall term and three hours a week during the Winter term, Senior year.

Electric Railways.—Design, installation and operation of electric railways, including surface, elevated and underground systems, urban and interurban systems.

Three times a week during the Winter term, Senior year.

Electrical Engineering.—A general consideration of electrical engineering as a whole, including the following and kindred subjects: Steam and hydraulic power and lighting plants, high-tension transmission lines and appliances and the use of the electric current in the various arts and industries.

Five times a week during the Spring term, Senior year.

Seminar.—Reading and discussion of electrical technical journals, institute papers, and other Electrical Engineering literature.

One hour a week during the Winter and Spring terms, Senior year.

Electric Design.—Design of electrical apparatus, dynamos and motors with full working drawings and calculations.

Six hours a week during the Spring term, Junior year, and four hours a week during the Fall and Winter terms, Senior year.

Electrical Engineering Laboratory.—Measurement of resistance, current, voltage, insulation, capacity, etc. Determination of efficiency of dynamos and motors. Plotting characteristic and hysteresis curves. Experiments with alternating currents, transformers and measuring apparatus.

Experiments with polyphase currents and constructions of diagrams, etc.

Four hours a week during the Spring term, Junior year. Six hours a week during the Fall, Winter and Spring terms, Senior year.

Thesis.—On the completion of the prescribed course in Electrical Engineering, candidates for a degree must submit a satisfactory thesis on some approved electrical subject. The thesis may be an experimental investigation, or a design of some electric machine, or distribution or power system.

CHEMISTRY AND GEOLOGY

Chemistry.—The prescribed course of study in this subject is taken by the students of all courses. It has been planned to include no more of the science than is advisable for a collegiate course, the object being to present the principles of the science and such facts as are necessary for a reasonably thorough understanding of these principles.

The means employed in giving instructions are recitations, lectures and laboratory practice. Our aim is to give the student the benefit of the discipline of the recitation system, the illustration of the lecture and the inductive system of the laboratory. The object aimed at is wholly educational and is included in an acquaintance with the scope and character of the science, the necessity of a clear perception of facts and an exact statement of the same; also the importance of neatness and exactness. The latter are obtained by requiring all experiments to be done quantitatively, first requiring the student to calculate the result which should be obtained, and testing his work by the agreement of the actual results with the calculated one.

Laboratory practice is not begun until the student has received sufficient instruction in stoichiometric calculation, and the general properties of acids, bases and salts, to make him to fully comprehend the simple problems given in illustration of the general principles of Chemistry.

The instruction during the first term covers the general principles of Chemistry and the Chemistry of the not-metals. The Chemistry of the metals is given by lectures. Organic Chemistry is taken up during the second term and the fatty compounds completed.

Agricultural Chemistry is taught by lectures and the textbook. Johnston's **Agricultural Chemistry**, edited by Professor Aikman, being used as a text. The lectures embrace, particularly, soil chemistry, manures and fodders.

The laboratory practice is the same for students of all courses up to the completion of the qualitative analysis; from this point on the work is adapted to the objects the student has in view and to his proficiency. While the student's wishes are

considered, the selection of the work is made by the professor in charge.

No instruction is given in assaying, as this line of work lies without our province and is provided for by other State institutions.

The laboratory is well lighted, heated and ventilated; it is supplied with all that is necessary for a very extended course in qualitative and quantitative analysis. For fuller description, see Buildings and Equipment.

Geology.—Two terms of the Junior year, the Winter and Spring, are devoted to this study. The relation of Geology to the soil is more fully discussed in the Spring term of the Senior year in connection with Agricultural Chemistry. Elementary Geology is taken up in the Winter term of the Junior year and systematic Geology in the Spring term.

The illustrative material at our command is fuller than usual and of most excellent grade. Of lithological material, we have about nine hundred specimens of good cabinet size, $3 \times 4\frac{1}{2}$ inches, representing all the important classes of rocks and many of the varieties. This collection of rocks is supplemented by a good working collection of the most important rock-forming minerals, and a small collection of sections serving to show the microscopic structure of the various classes of rocks and the optical properties of their component minerals. Economic Geology is represented by collections of ores, of which those of iron, lead and silver and copper are representative, and further by a large collection of ornamental materials, marbles, serpentines and porphyries. This collection consists of polished specimens. Many of them are large and all of them choice, making a very beautiful and attractive collection. Historical Geology is represented by a collection of seven hundred and fifty fossils and forty casts. These fossils illustrate the life of every geological age and period. Those of the Mesozoic and Cenozoic are, for the greater part, foreign, while those of the Paleozoic are mostly from American localities.

DEPARTMENT OF GENERAL AND DOMESTIC SCIENCE

COURSE OF STUDY.

FRESHMAN YEAR.

FALL TERM.

College Algebra, 5.
Rhetoric, 5.

} P. M.— $\frac{1}{2}$ Pattern Drafting and
Plain Sewing, 10.
 $\frac{1}{2}$ Canning and Pre-
serving, 10.
German, 5.
Botany Lab., 10.

WINTER TERM.

Trigonometry, 5.
English Literature, 5.
Rhetoric, 2.
Themes, 3.

} P. M.— $\frac{1}{2}$ Millinery and Em-
broidery.
 $\frac{1}{2}$ English Consulta-
tion.

SPRING TERM.

Physics, 5.
German, 5.
Household Hygiene or College
Algebra, 5.

} P. M.—Physical Lab., 10.

SOPHOMORE YEAR.

FALL TERM.

Zoology, 5.
Discussions or Analytics, 5.
Physiology, 5.

} P. M.—Zoological Lab., 10.

WINTER TERM.

Commercial Law, 5.
Astronomy or Calculus or
Horticulture, 5.
Physiology, 5.

} P. M.—Dressmaking, 10.

SPRING TERM.

Mediaeval Institutions, 2.	}	P. M.— $\frac{1}{2}$ Drawing, 10. $\frac{1}{2}$ Entomological Laboratory, 10.
Heat, 3; History of Education, 2, or		
Calculus, 5.		
English History, 3.		
Entomology, 5.		

JUNIOR YEAR.

FALL TERM.

Drama, 4, or	}	P. M.— $\frac{1}{2}$ Horticultural Laboratory, 10. $\frac{1}{2}$ Chemical Lab., 10.
Philosophy of Homemaking, 4.		
Horticulture, 5.		
Chemistry, 5.		

WINTER TERM.

$\frac{1}{2}$ Floriculture, 5.	}	P. M.—Chemical Lab., 10.
$\frac{1}{2}$ Chemistry of Cooking, 5.		
Advanced History, 3.		
Pattern Drafting, 2.		
Chemistry, 5.		

SPRING TERM.

Organic Chemistry, 5.	}	P. M.— $\frac{1}{2}$ Chemical Lab., 10. $\frac{1}{2}$ Art Needle Work, 10.
Home Nursing, 4.		
Psychology, 3.		
Advanced History, 3.		

SENIOR YEAR.

FALL TERM.

Logic or International Law, 3.	}	P. M.—Sewing, 4. Horticultural Lab., 6.
Literature, 5.		
Bacteriology, 5.		
Sociology, 3.		
Thesis.		

WINTER TERM.

Geology, 5.	}	P. M.— $\frac{1}{2}$ Cooking, 10. $\frac{1}{2}$ Sewing, 10.
Political Economy, 3.		
Literature, 4.		
Evolution, 1.		
Science of Nutrition, 4.		
Thesis.		

SPRING TERM.

English Prose, 3.	}	P. M.—Advanced Needle Work, 10.
½ Fiction, 5.		
½ Special Lectures, 5.		
Ethics, 3.		
Constitution of the U. S., 4.		
Thesis.		

The establishment of the Department of Domestic Science in the Colorado Agricultural College was the outgrowth of the conviction that the education of a young woman is no more complete without training in the domestic arts and underlying sciences than is the education of a young man without training in the practical arts of life.

Knowledge is an excellent thing; but knowledge and the acquired skill to apply that knowledge are infinitely better. To know what to do is important; to know the same thing, and in addition to have skill in doing it, is reaching out and taking hold of the best.

Thus committed to the doctrine that true education should include, and in fact does include, culture of the moral and mental powers in connection with the practical training in the industrial arts, the State Board of Agriculture illustrated its theory in the founding of this Department in June, 1894.

The following fall witnessed the opening of the old Horticultural building under a new name with a purpose of making this feature a great success.

The appreciation of this work is manifest in the fact that since its introduction the number of young ladies in the College has more than doubled. Since the majority of young ladies will be homemakers, this subject is of paramount importance. Through this training that which seemed drudgery is transformed into an attractive, elevating and very useful art.

The course includes lectures and classroom recitations, found in the following subjects:

I. **Hygiene and Sanitation.**—This subject is taken up at the beginning of the Spring term of the Freshman year. The textbook used is a collection of **Public Health** essays relating chiefly to the home and school, and are classified in this way:

1. Study of Home.

- (a) Selection of Location.

- (b) The building of the home, from foundation to attic, including materials used, the plumbing, heating, lighting, ventilation, etc.
 - (c) The surroundings; lawns, trees and shrubbery; emphasizing sanitary and hygienic conditions.
 - (d) Furnishing the home for the purposes of convenience, adornment and the happiness of the inmates.
2. The use of Disinfectants.
 3. Individual Prophylaxis Against Disease.
 4. School Hygiene.
 5. Foods.
 6. Preventable Causes of Disease.

II. **Emergencies, Conversation, Etc.**—During the fall term of the Sophomore year the leading aim is to teach self-reliance, presence of mind, an interest in general subjects, and to train the student to express herself concisely, intelligently and entertainingly.

The scheme is varied for each day in the week. Tuesdays are devoted to emergencies. To illustrate: One subject taken is the resuscitation of the apparently drowned. While in all cases of accident, a physician should be called, the attendant may be of great use while the physician is coming. On Wednesdays the subjects always relate to the human organisms. For instance, the skin is studied under the divisions of functions and care. Thursdays each young woman is required to prepare for the class an item of interest that belongs to the general subject of Home Science. The lesson for Friday morning is one of great importance. Some subject for discussion is announced one week in advance, with a member of the class as leader. For twenty minutes the one in charge presides; then the instructor takes the chair and recapitulates, adding and modifying wherever necessary.

Since the art of conversation has been very much neglected in recent years, the young women appreciate this opportunity of giving special attention to so valuable and cultivating a subject, particularly since it is absolutely indispensable in the well-ordered home.

III. **Chemistry of Cooking and Cleaning.**—In the winter term of the Junior year the subject considered is the Chemistry of Cooking and Cleaning. The practice of cooking can not be

carried on successfully without some knowledge of chemical science. The text-book used is the work of Mrs. Ellen H. Richards. The work of this term tends to lift the veil of mystery from many kinds of housework, and to fill the mind of the student with a broader conception of her sphere as a homemaker. Moreover, the actual performance of the labor is materially lessened when these subjects are properly understood.

IV. Home Nursing.—At the opening of the Spring term, Junior year, Week's Text-Book on Nursing is placed in the hands of the class, and as thorough investigations and study as possible without clinical practice is carried forward. In all of these lines attention is given to the subject of micro-organisms, as the knowledge of them and their functions is variously related to the matters under consideration.

V. The Philosophy of Home Making.—This study has been added to the course this year and is designed to treat the whole province of the home from a philosophical standpoint. Fall term, Junior year.

VI. Science of Nutrition.—During the winter term of the Senior year the Science of Nutrition is studied with Atwater's **Chemistry and Economy of Food**. Bulletin No. 21, of the Office of Experiment Stations, Washington, D. C., is taken as the basis. Much supplementary reading is required, and the study of dietaries is made an important feature of this division.

VII. Studies in Hygienic and Artistic Pattern Drafting.—The human form is to be studied with health, beauty and utility in view, in the making of patterns and clothing. Winter term, Junior year.

VIII. Lectures.—These are given by specialists and are of great importance to young women in organizing and conducting their own homes. Spring term, Senior year.

Sewing.—The afternoon work in sewing consists of drafting patterns, cutting out garments, plain sewing, plain and fancy stitches, embroidery and millinery. Everything is done systematically and methodically, and not for a moment is sight lost of the high educational value of this training. Special instruction is given in dressmaking. Notwithstanding the fact that no student is required to purchase material for sewing, it is invari-

ably done, because in so doing she is entitled to the product of her labor.

The Kitchen.—The work in the kitchen laboratory includes the study of foods, with practice in all kinds of cooking and laundering. How to serve food; the care of the table linen; the arrangement of dining tables for all occasions, and how to make all kinds of food serve their best purposes at the least cost, are among the subjects considered.

Housekeeping.—Since the building in which Domestic Science is taught is furnished, as far as possible, as a home would be, actual work in housekeeping is carried on. Sweeping, washing of wood and glass, as well as dusting, form a part of each student's duties.

General Topics.—A lecture is given on each Monday afternoon on some topic relating to the care of the house, clothing, or person; social duties; customs, customs of good society and anything that will aid in the development of a perfect womanhood.

Thesis.—The subject for thesis must be chosen after consultation with the head of the department selected by the student, not later than October 15th, of the Senior year. The thesis must record the result of original investigation of some subject, and must be approved by the head of the department directing such work, and filed with the Secretary of the Faculty not later than May 15th, of the Senior year.

NORMAL COURSE IN DOMESTIC SCIENCE

(TWO YEARS.)

JUNIOR YEAR.

FALL TERM.

Rhetoric, 5.
Chemistry, 5.
Discussions, 5.

P. M.— $\frac{1}{2}$ Canning and Pre-
serving, 10.
 $\frac{1}{2}$ Pattern Drafting and
Plain Sewing, 10.

WINTER TERM.

Rhetoric, 5.
Chemistry, 5.
Commercial Law or English
Literature, 4.
Thesis, 1.

P. M.—Chemical Lab., 10.

SPRING TERM.

Methods, 2.
Thermics, 3.
Household Hygiene, 5.
History of Education, 2.
Psychology, 3.

P. M.— $\frac{1}{2}$ Needlework.
 $\frac{1}{2}$ Normal Work.

SENIOR YEAR.

FALL TERM.

Bacteriology, 5.
 $\frac{1}{2}$ Philosophy of Home Mak-
ing, 5.
 $\frac{1}{2}$ Dietetics, 3; Laundry, 2.
Physiology, 5.

P. M.— $\frac{1}{2}$ Dressmaking, 10.
 $\frac{1}{2}$ Bacteriological Labo-
ratory, 10.

WINTER TERM.

Science of Nutrition, 4.
Chemistry of Cooking, 2.
Advanced History, 3.
Physiology, 5.
Thesis, 1.

P. M.— $\frac{1}{2}$ Cooking, 10.
 $\frac{1}{2}$ Sewing, 10.

SPRING TERM.

½ Special Lectures in Domestic Science, 5.	}	P. M.—½ Advanced Needle Work.
½ Fiction, 5.		
Home Nursing, 4.		½ Millinery and Embroidery.
English History, 3.		
Ethics, 2.		

Prerequisites for the Normal Course are identical with the requirements for admission to the Collegiate Courses.

Since the establishment of the Domestic Science Course in this College ten years ago, there has been a demand for a short course.

With the growth of the department this demand became so strong that it was deemed advisable to add to the regular College curriculum a **Normal Course in Domestic Science**. Many young women who cannot afford to take the regular college course wish to equip themselves as teachers. The specific object of this course is to qualify students to fill positions as teachers and supervisors of the various branches of the household sciences and arts.

The course is thorough and is designed to meet all requirements of the students in an educational way and, at the same time, fit them for teaching that which is of paramount importance—the **organization of the home**.

The subjects pursued are similar to those introduced into the curriculum of the general course. A desire for research work along subjects allied to the household sciences is inculcated and while the thought of the specialist is ever in mind, still a wide horizon is kept in view in order that the education be broad and uplifting. All the subjects are studied from a **Normal** standpoint and the educational value and underlying motives become important factors of the work. See general course (page 84) for outline of various subjects.

ARCHITECTURE

FRESHMAN YEAR.

FALL TERM.

College Algebra, 5.	}	P. M.—Elementary Design,
Rhetoric, 5.		3,
History of Architecture, 2.		Construction Draw-
Construction, 3.		ing, 2.

WINTER TERM.

Trigonometry, 5.	}	P. M.—Construction Draw-
Construction, 5.		ing, 5.
Rhetoric, 3.		
Drawing, 2.		

SPRING TERM.

Physics, 5.	}	P. M.— $\frac{1}{2}$ Physical Labora-
Surveying, 5.		tory.
College Algebra, 5.		$\frac{1}{2}$ Surveying.

SOPHOMORE YEAR.

FALL TERM.

Mechanics, 5.	}	P. M.—Orders of Architec-
Analytics, 5.		ture.
History of Architecture, 2.		
Descriptive Geometry, 3.		

WINTER TERM.

Differential Calculus, 5.	}	P. M.—Orders of Architec-
Perspective, 4.		ture.
History of Architecture, 3.		Renaissance Design.
Descriptive Geometry, 3.		

SPRING TERM.

Integral Calculus, 5.	}	P. M.—Romanesque and
Planning and Requirements of Building, 5.		Gothic Design.
Architectural Composition, 3.		
Perspective, 2.		

JUNIOR YEAR.

FALL TERM.

Chemistry, 5.	}	P. M.—Chemical Laboratory, 3.
½ Landscape Gardening, 2.		
Strength of Materials, 5.		
Residence Construction, 3.		

WINTER TERM

Chemistry, 5.	}	P. M.—Chemical Laboratory
½ Trusses and Bridges, 5.		
½ Materials of Engineering, 5.		
Estimating, 2.		

SPRING TERM.

Specifications and Contracts, 3	}	P. M.—Design, 5.
Trusses and Bridges, 5.		
Geology, 5.		
Superintendence, 2.		

SENIOR YEAR.

FALL TERM.

Composition of Ornaments, 7.	}	P. M.—Advanced Design.
Electricity, 5.		
Thesis, 2.		
Seminar, 1.		

WINTER TERM.

Sanitary Construction, 2.	}	P. M.—Thesis, 3. Drawing, 2.
Heating and Ventilation, 3.		
Pen and Ink Drawing, 5.		
Architectural Engineering, 5.		

SPRING TERM.

Constitution of U. S., 4.	}	P. M.—Thesis.
Working Drawings, 6.		

It is so clearly under the provision of all the acts, Federal and State, relating to Agricultural and Mechanical Colleges, to provide the youth of the land with such theoretical and technical education as shall make them educated and skilled workmen of

high order, that the State Board of Agriculture has decided to introduce the foregoing course in Architecture.

The immediate future of Colorado will lay great demands upon young men skilled in making plans for, and superintending the building of artistic and convenient homes and permanent public and business buildings.

The aim of this course is to secure to its graduates an ample preparation for the demands of the best professional practice. To that end, its course of study combines thorough professional training with the essentials of a liberal education, being so framed that the student may acquire thorough skill in draughtsmanship, combined with a critical taste and creative resource in design and sound judgment in construction.

To accomplish these results, the course is so arranged as to present architecture as an art, which, while inseparable from sound construction and obedience to utility, yet lies above and beyond these attributes in the field of the Fine Arts proper. The most important division of the professional work pertains, therefore, to design; and to this subject, in its various phases, the relatively largest portion of the student's time is devoted throughout the course. Careful attention is given to subjects comprehended under the term "Architectural Engineering," comprising pure and applied science, the nature of materials and the theory and practice of construction and of sanitation. Draughtsmanship receives constant attention throughout the course, not only in drawing incident to the Design Courses, but also in various lines of instruction in pure drawing.

The purely professional work of the course thus outlined covers some three-fourths of the time required of the student; the remaining portion being devoted to strictly liberal studies.

The study of Architecture, as here presented, while essential to a proper architectural training, has also strong claims of value as a means of liberal culture, if, together with the purely collegiate branches, consideration be given to that basic element in the professional curriculum which pertains especially to the art of Architecture.

Architectural Engineering, while not a distinct course, is presented in its essential elements.

Drawing in its numerous forms is esteemed as a means of cultivating the perspective faculties, but its great value lies in its peculiar effect in the development of taste, imagination and

the faculty of expressing, so vital a necessity in creative work.

The work, at the beginning, may be considered as contributing to this end, although its exercises are given a somewhat formal character, but later charcoal drawing from the cast of ornament introduces the work in pure drawing, expanding into "antique" and "life," while much time is given to instruction in water color (in still life, nature and architectural perspective), and pen and ink rendering. Associated with this work and related no less to that in architectural drawing and in pure science, are the courses in Perspective and Shades and Shadows.

Supplemental to this course, a series of lectures will be given before the classes by prominent architects and members of the Colorado Chapter of The American Institute of Architects, upon the various phases of professional work.

MATHEMATICS

General Statement.—The course in Mathematics is full and complete. The different subjects are taken up in logical order as rapidly as the student has fitted himself for them. The courses offered are the following:

First Sub-Freshman—Elementary Algebra, three terms.

Second Sub-Freshman—Plane and Solid Geometry, three terms.

Freshman—College Algebra, two terms.

Plane Trigonometry, one term.

Sophomore—Analytical Geometry, one term.

Differential Calculus, one term.

Integral Calculus, one term.

Descriptive Geometry, two terms.

Algebra.—This subject is pursued during the first Sub-Freshman and Freshman years. The first term's work is designed to give the student as clear ideas as possible of the extensions introduced into the fundamental operations of arithmetic by the notation of two sorts of quantities directly opposite in character, and the conciseness obtained by the use of literal notation. He is taught the fundamental operations of addition, subtraction, multiplication and division and also the methods of solving simple equations containing one unknown quantity. Subsequent work during the next two terms acquaints him with factoring, common factors and multiples, fractions, fractional equations, simple simultaneous equations containing two and three unknown quantities; involution, evolution, theory of exponents, radicals and imaginary expressions. The text-book used is "Elements of Algebra," by Wells and the work in the first Sub-Freshman year extends to quadratic equations. This subject is continued in the Freshman year.

Geometry.—This subject is taken up at the beginning of the second Sub-Freshman year, and in the three terms given to this study the student is given a thorough and practical acquaintance with the construction of geometrical figures. He also takes up formal proof and is led to see the logical dependence of the entire subject upon the few axioms and elementary concepts de-

rived directly from experience. He is also given thorough practice in the mensuration of geometric magnitudes. So far as time and ability of the student will permit, he has practice upon original exercises. The year's work covers the whole of Wentworth's "Plane and Solid Geometry."

College Algebra.—For two terms in the Freshman year the student deals with the principles of advanced algebra. The text-book used is Wentworth's "College Algebra." The work begins with quadratic equations, and during the first term the student is expected to cover the entire subjects of quadratics, ratio and proportion, variation, progressions, the binomial theorem, and logarithms. During the second term the following subjects are taken up in order: Variables and limits, series, general properties of equations, derivatives, transformation and solution of equations of the third and higher degrees (involving "Horner's Method" and "Strum's Theorem"), and what time remains is given to choice, chance, and the graphical representation of functions, thus opening the way for Analytical Geometry.

Trigonometry.—This subject is taken up in the Freshman year and during a term's work in it the student is made familiar with "Plane Trigonometry." He is given clear ideas of the trigonometrical concepts, shown their relations and given considerable practice in the practical application of this branch of mathematics.

At this point all students in the Agricultural, General and Domestic Science courses discontinue their mathematical studies. From the wide application of mathematics to all branches of engineering, those students electing any one of the courses in engineering continue their mathematical studies throughout the entire Sophomore year.

Analytical Geometry.—This subject is taught during the first term of the Sophomore year. Wentworth's "Analytics" is the text used, and the student is made acquainted with the method of co-ordinates and the connection between algebraic and geometric forms. The fundamental properties of conic sections, loci of the second order, and higher plane curves are developed and as much more of the subject as time permits.

Calculus.—The Winter and Spring terms of the Sophomore year are devoted to the study of the Differential and Integral

Calculus. "Differential and Integral Calculus," by Hutchinson and Snyder, is the text-book used, and the subject is pursued as there given. The notation of limits is, however, made the logical basis upon which the subject is developed.

Descriptive Geometry.—This subject is taught to the students of the engineering courses for two terms during their Sophomore year. The principles of projection, intersection, development, etc., are discussed and illustrated by a great variety of problems, all of which are accurately worked out on the draughting-board by each student.

The department is provided with a set of Schroeder models from Darmstadt, and with models of warped surfaces, etc., for the purpose of illustration in the study of geometry. There is also a set of drawings for the use and study of curves and curve tracing.

The purpose of instruction in this department is two-fold: first, to give the student clear and exact ideas of magnitude and their measurements; and second, to give him such skill in computation as to enable him to handle easily and satisfactorily the practical problems he is likely to encounter in after life.

HISTORY AND LITERATURE

HISTORY.

The purpose of the work in history is (1) to give that information concerning the past which the intelligent citizen requires; (2) to aid the student in acquiring a scientific method of investigation and consideration of historical data; (3) to awaken an interest in the great field of history and biography which the library affords.

The following courses in History are offered:

Course I. Ancient History.—This course is offered during the Fall and Winter terms of the first Sub-Freshman year. The student is expected to have had thorough preparatory work in the study of History of the United States. The object of the course will be an acquaintance with the great epochs of history, with special attention to the part taken by Greece and Rome in the advancement of human progress. A text-book will be used, supplemented by library references, classroom lectures and the stereopticon whenever desirable.

Course II. Mediaeval Europe.—A critical study of the movements and institutions which characterize the middle ages, the renaissance and reformation periods, and the rise of modern nations, is given in the Fall term of the Sophomore year. Extracts from the original sources in connection with suggestive studies are used, and the student will be encouraged to form his own opinions and to produce proofs to support his judgment as to the influence of this period in the world's civilization. The reference library, lectures, the stereopticon and historical composition by the students, will be features of this course.

Course III. English History.—This course follows in the Winter term of the Sophomore year. The influence of English history upon American institutions makes this study one of particular interest, and very valuable as preparation for work in English Literature, Constitutional History and Political Economy. A text-book will supply an outline for the course, and collateral readings from the leading authorities will be furnished by the library.

Course IV. Philosophy of History.—This course, offered during the Winter and Spring terms of the Junior year, includes study and practice in historical investigations; the laws governing human actions; reciprocal influences of religion, literature and government; comparisons and criticisms of past civilizations and their relation to modern progress. Adams' European History as a text will supply an outline for the course which will be supplemented by lectures and library readings.

Apparatus.—By means of the stereopticon and a fine collection of views, many scenes of historic and literary interest are brought into the classroom. A valuable collection of foreign photographs also belongs to this department, by which the art and architecture of the past and present are illustrated.

Four cases of historical maps add greatly to the interest in studying history. They include twenty maps from the celebrated presses of W. and A. K. Johnston, Edinburgh, Scotland. These maps illustrate ten periods of European history since the Christian era, and also include seven maps for the study of ancient history and excellent maps for United States History.

LITERATURE.

It is the object of this study to lead students by direct contact with the literary masterpieces to understand the art in literature, and to develop their power of appreciating the strength and beauty of English writings.

Course I. American Literature.—The Spring term of the first Sub-Freshman year is devoted to this course, the purpose being to develop intelligent appreciation of American masterpieces and to promote a love for our standard literature. Several American classics will be made the subject of critical classroom study.

Course II. English Literature.—In the Winter term of the Freshman year a brief historical outline of the periods of English Literature is supplemented by study of the works of representative authors. Masterpieces from Chaucer, Spenser, Bacon, Shakespeare and later writers form the basis for the term's work.

Course III. The Drama.—The Spring term of the Sophomore year will be devoted to Shakespeare and the drama. Lectures will be given on the principles of dramatic art, with particular attention to character study, plot development, and the contrasts between ancient classic and modern romantic drama. Several of Shakespeare's plays will be studied in class. Frequent themes will be required on topics suggested by the reading.

Course IV. English Literature.—The growth and development of literary art during the Seventeenth, Eighteenth and Nineteenth centuries will form the basis for work during the Fall and Winter terms of the Senior year. Much reading will be required and more recommended. The class work will consist of the study of several masterpieces from Milton to Tennyson, with written exercises on subjects suggested by the readings.

Course V. English Essays and Fiction.—During the Spring term of the Senior year, special attention is devoted to English prose. The leading essayists and critics will be studied. The history and growth of the novel, will be considered; its place in literature; use and abuse of fiction; fiction as a laboratory for character study, etc., will furnish subjects for the lectures of the course. Illustrative readings will be required.

Library Reading.—The College Library is the laboratory of this department, and four hours per week of library reading is expected of each student in connection with all courses in History and Literature. During the Sub-Freshman course in History the system of library classification is explained, and the student is made familiar with the use and location of the valuable works of reference with which our library is supplied.

CONSTITUTIONAL HISTORY AND LAW

The study of the history of the Constitution of the United States, and of the growth of free institutions, which that document so fitly emphasizes, is a prominent feature of the course, especially during the Senior year. With Andrew's concise but comprehensive text-book as a basis, instruction is given concerning all the events and causes which led to the formation of the National Government as it exists to-day, and the same traced to their historic sources. The workings of the Federal Government, together with its relations to the States, are also amply illustrated by frequent class lectures. Such information is due at the hands of every institution maintained by State or National aid or tending to better fit their graduates for the duties of citizenship, and for the responsibilities of a republican form of government which rest with especial weight upon those who have received their education free at the hands of the State and Nation.

In connection with this study of constitutional history, there is also instruction given in International law, with Davis as a text-book, and which includes not only a concise investigation of the general principles and rules of this science, but a history of all the great diplomatic questions which have at different periods claimed the attention of the people of the United States, from the French alliance during the war of the Revolution to the conference at The Hague. This naturally comprises a consideration of the diplomacy which has led to all the vast acquisitions of territory which have extended the United States from the Atlantic to the Pacific.

Closely associated with this work are studies in political economy with Ely as a text-book, and also in irrigation law, a knowledge of which is of such supreme importance in this and other states in which agriculture by irrigation is practiced. Frequent lectures on the history and growth of the trans-Mississippi West are also given.

These studies, following a thorough course in history, cover in a comprehensive manner the various political sciences, and, fitly supplementing the scientific and technical work of other departments, will be found of every-day practical advantage to all graduates when they shall have entered upon the real and active duties of life.

RHETORIC AND PHILOSOPHY

RHETORIC.

The aim of the following course in Rhetoric and English Composition is, in general, two-fold: (1) To train the student in the theory and the practice of English Composition; and (2) by the study of the fundamental principles of style, to aid him in an intelligent appreciation of literature.

Course I. Elementary Rhetoric and Composition.—This course extends daily throughout the first Sub-Freshman year. The classroom work is divided equally between theory and practice. *Beginnings of Rhetoric and Composition*, by A. S. Hill, *Penniman's Prose Dictation Exercises*, and Webster's *Academic Dictionary* are the required text-books. Composition work is carefully encouraged, and written exercises required almost daily. Students are drilled to correct their own mistakes. Before entering upon this course, or upon any later course, students must prove their unquestioned acquaintance with technical English Grammar.

Course II. Elementary Rhetoric and Composition.—Elementary Rhetoric (English in general) is continued informally throughout the second Sub-Freshman year, any written work of any of the formal scheduled courses being the basis for criticism. The aim of this course is to insure accuracy in the interpretation of English text-books, lectures, and the like, as well as to emphasize as strongly as possible the fact that English is the basis of accuracy in scholarship. Although this course is informal (i. e., not subject to set lessons and hours), it is a prerequisite for all English work of Freshman rank or higher.

Course III. Rhetoric and Themes.—This course follows the *Elementary Rhetoric and Composition* of the Sub-Freshman class, which is a prerequisite. Devoted mainly to the study of essay structure and the fundamental principles of the different forms of discourse. Analysis of good prose models. The course is given daily throughout the Fall and Winter terms of the Freshman year.

PHILOSOPHY.

Course I. Psychology.—A course of elements and outlines of Physiology is given the Spring term of the Junior year, and it aims to familiarize the student with first psychological principles. The course is supplemented by lectures and simple laboratory work. Text-book for 1905, James' **Psychology**—**Briefer Course**. Three hours.

Course II. Logic.—This course is elementary, and is given the Fall term of the Senior year. It is presented through recitations, discussions, and many original exercises. The syllogism is especially and minutely worked out. A number of scientific and philosophical arguments, as well as characteristic judgments of immediate perception are studied. The aim is to bring out in a clear and practical manner both the inductive and the deductive sides of inference, and to point out some of the principles of philosophy that are involved in them. The text-book for 1904-1905 is Creighton's **Introductory Logic**. Three hours.

Course III. Ethics.—This course is given the Spring term of the Senior year. The work in Ethics bases itself upon the psychological ideas acquired in the previous courses, and applies them to the analysis of character, habit, desires and ideals from an ethical point of view. Mackenzie's **Manual of Ethics** is followed pretty closely as a text-book, supplemented by library work. Three hours.

MODERN LANGUAGES

In German and French, the aim of the work is to enable students to read easily, so they may be independent in scientific research and reading, and also to interest them in the language itself. The work covered in German and French is that required for entrance to our best universities and colleges. In Spanish we desire to give the student a vocabulary, knowledge of idioms and, above all, familiarity with the sounds of words that he may recognize them when spoken.

First year German for the Sub-Freshman recites five times a week through the year. The first term's work is on grammar forms, composition, idioms, pronunciation, dictation, translation at hearing, Grimm's Law and easy translation. This work is continued through the winter term, sight translation being introduced. In the spring term the grammar is reviewed, translation made more difficult and composition introduced once a week. Several poems are learned during the year.

Second year German for the Freshman, five recitations a week, will consist of translation of German classics and scientific magazine articles, committing to memory German selections and prose composition, once a week.

The work in French is similar to that in German, there being the same number of recitations during the year for the Sub-Freshman. In the Freshman work for the engineers there are only two recitations a week, translation being the sole object. A Sophomore class in second year French will read more difficult translation twice a week.

In Spanish there are five recitations weekly for the Sub-Freshmen. In the fall term the grammar is the main work, a little translation, idioms, conversation, translation at hearing and dictation. In the winter term composition, based on the grammar, translation, some study of business forms. In the spring this work is continued with some newspaper reading and letter-writing, more difficult translation.

Students who intend to take the Agricultural Course should elect German, those desiring to become Engineers, French, while Spanish is expected of candidates for the Commercial Courses.

COMMERCIAL COURSE

JUNIOR YEAR.

FALL TERM.

Commercial Arithmetic, 5.	{	P. M.—Bookkeeping and Pen- manship.
Spelling, 5.		
Rhetoric, 5.		

WINTER TERM.

Commercial Arithmetic, 5.	{	P. M.—Bookkeeping and Pen- manship.
Composition, 3.		
Themes, 2.		
Business Correspondence, 5.		

SPRING TERM.

Commercial Arithmetic, 5.	{	P. M.—Business Practice and Banking.
Accounting, 5.		
Business Correspondence and Penmanship, 5.		

SENIOR YEAR.

FALL TERM.

International Law, 3.	{	P. M.—Stenography and Type- writing.
Stenography, 2.		
Commercial Geography, 5.		
Orthography, 5.		

WINTER TERM.

Commercial Law, 4.	{	P. M.—Stenography and Type- writing.
Political Economy, 3.		
Sociology, 3.		
Stenography, 5.		

SPRING TERM.

Stenography, 7.	{	P. M. Typewriting and Office Practice.
Commercial Law, 4.		
Constitution of U. S., 4.		

The aim of the course is to meet the wants of those who are seeking a high grade business education. It trains the student to meet the exacting demands of modern commercial life. The fact is recognized that the market is already overcrowded with young people of limited and imperfect preparation and unable to avail themselves of the opportunities of the business world.

It is not the design of the Commercial Department to educate students for a business life in the shortest possible time, but rather to train them in such manner that they may fill positions of the highest trust. Experience has clearly shown that persons of limited and imperfect training invariably fall into the lowest class of workers; while those who are well trained and educated are sought and liberally paid for their services.

The instruction of this Department articulates so closely with the work of the College that the two harmoniously blend and unite to give a thoroughly cultural as well as technical training for the higher business pursuits.

Students seeking the benefit of a business education will not only secure them in full measure, but they will also have the advantage of being connected with an institution where superior facilities for all kinds of educational and cultural work exist. The large library, the well-furnished museum, the College associations of all kinds, and all the elaborately equipped laboratories are open to students of the department, and thereby they can round out a training far broader and more liberal than that secured in a school from which such cultural opportunities are almost wholly absent.

Thoroughness.—One of the most important features of the course is thoroughness. Herein lies the secret to success, lucrative positions and promotion. Thorough training is absolutely necessary. The student's work is examined critically and is not credited unless it is up to the required standard.

Shorthand.—It has been truly said that the practice of shorthand "draws out all the powers of the mind; it incites invention, improves the ingenuity, matures the judgment, and endows the retentive faculty with the superior advantage of precision, vigilance and perseverance."

The student devotes from two to four hours per day throughout the Senior year to the acquirement of this useful and

indispensable art, using Isaac Pitman's Shorthand Instructor (20th Century Edition), as a guide. Students who complete this course find no difficulty in obtaining high-grade positions.

Aside from the value of phonography as a means of obtaining an English education, embracing as it does, a thorough knowledge of orthography, grammar, composition, rhetoric, etc., the earnest student has no surer means of turning his knowledge to practical account than by the successful completion of this course, which includes instruction in punctuation, preparation of manuscript for the press, proof reading, etc.

The work of the department appeals strongly to teachers, graduates of high schools, academies, and universities, as the surest means of bettering their immediate condition, and in many instances proves a stepping-stone to higher pursuits and positions of trust and responsibility.

The Literary and Scholastic Attainments of the graduates of the Commercial Course is the strongest factor in commending them to the business and professional world, into which they are received without question. There is no better assurance of obtaining a "position" than the possession of a diploma from this department.

The United States Civil Service offers opportunities for which it is the special province of this department to prepare young people desirous of qualifying for the examinations.

Students who pass the preliminary amanuensis examinations the first week in April of each year, are allowed to begin specialization in the various branches of reporting, i. e., mercantile, legal, legislative and technical.

Typewriting.—"The typewriter is so ingenious and simple in its construction that the average person can learn to write words on it in ten minutes' time. Hence the long popular belief that no special instruction is needed, but that a few days' practice alone will enable one to become a competent and valuable operator. This fallacy has brought disappointment and failure to many a bread-winner, has been the cause of untold annoyance to employers, and has forced capable and conscientious teachers to let their students go out unprepared because public opinion refused the time and expense necessary to learn properly the art of Typewriting. As a natural result, business men are now

complaining bitterly of the incompetency of applicants, even when they are the product of so-called business schools."—Complete Typewriting Instructor—Barnes.

"The workers of the world bend before the machine which Puck parodies as being 'more puissant than the Gatlin gun,' and eagerly acknowledge its power. Commerce, the law, science, literature, art, business everywhere, education in manifold aspects—one and all, go to the little machine for some measure of assistance, and no branch of physical or intellectual labor comes away unsatisfied.

"Man's life is quickened and lengthened by the tireless activity of the writing machine. Its incessant click beats marching time to every forward movement, and makes progress more progressive. Men turn away from weary toil to find labor lightened with sympathetic zeal when the fingers begin their salutary movements.

"A new profession has opened to the gentler sex, and all welcome her to a place in affairs. Educators are not indifferent to the signs of the times, and the schools are receiving an impulse from no less an agency than the writing machine.

"Hardly since the dawn of the present era of civilization has an invention or discovery worked greater wonders; never, we think, has a single mechanical device contributed so widely and so variously to the welfare of man. The pen is indeed mighty, but the steel corrodes. The tongue is silvery with speech, but the rhythmic keys speed language on its mission. The mind is pregnant with fertile thoughts, but ease and speed of writing makes the human intellect ten times more prolific. Commerce expands with the peopling of the continents, and the natural growth of prosperity on land and sea; but prominent among the activities of the world the typewriter already occupies an important place—busy where business is liveliest, making man's intercourse with man readier and closer, and contributing more or less directly to the success of almost every human achievement."—Bates Torrey.

Needless to say the "touch" system of typewriter operation is taught. The equipment is unequalled anywhere in the West, and consists of twenty-five machines of standard make. From two to three hours per day are given to instruction and practice in this subject. The following outline, taken from Pitman's Phonetic Journal, is followed with slight variation:

1. Business correspondence from shorthand, longhand and printed matter.

2. Copying badly-written and confused manuscript; literary, technical, commercial, legal, scientific and medical matter. Correct arrangement of manuscript matter; necessary line-spacing for various kinds of work, foot-notes and extracts, side-headings.

3. Advanced displayed work. Correct centering of headlines; arranging matter to balance on paper so as to get top and bottom margins approximately equal.

4. Advanced tabular work. Rules for dividing scale in order to arrange columns regularly and accurately. Accounts, red ruling. Schedules of quantities and prices, market, stock exchange, and other quotations and tabulated matter from plain and rough draft.

5. Legal work, bills of costs, agreements, indentures, wills, affidavits, statements of claim, writs, depositions, etc., etc., draft copies engrossments, correct endorsement, and backing.

6. Balance sheets and financial statements; wide and narrow carriage; red ruling.

7. Specifications: architects', engineers', contractors', electricians'.

8. Companies' prospectuses; corporation reports.

9. Tenders, estimates, and contracts.

10. Commercial, literary and legal abbreviations; chemical, mathematical, and other signs; foreign words and phrases of international use, with their meanings.

11. Dramatic work; prompt book; actors' parts; correct red ruling.

12. Duplicating, carbon, semi and full; stencil, letter press copying.

13. Mechanical construction, manipulation, and care of the machine; degree of touch, the wrong side of the paper must not show perforation by full stops, commas, hyphens, etc.; possible defects and accidents; rectifying temporary derangements likely to occur to machine.

14. Correct use of the various characters composing the keyboard; signs made by combinations, foreign accent marks, diphthongs, raised letters. Roman notation.

15. Writing short sketches and answering questions relating to office routine, commerce, banking, insurance, and stocks.

16. Writing short essays on subjects of literary interest.
17. A syllabus of the United States Civil Service.

Bookkeeping.—The student is first instructed in the elements and principles of theoretical bookkeeping, both double and single entry, and as soon as he shows that he has a clear understanding of the elementary work, he is promoted to advanced bookkeeping. Here he learns to keep books in various lines of business, including mercantile, both wholesale and retail; and manufacturing. After acquiring sufficient skill in advanced bookkeeping, and passing satisfactory examinations, the student enters actual business practice; is assigned his official desk as a business man, and is furnished with a cash capital and stock of merchandise, according to the business in which he is to engage. He issues and receives every form of business paper, including checks, notes, drafts, orders, receipts, leases, articles of agreement, bills, invoices, statements of accounts, account sales, bills of lading, money orders, C. O. D. sales and purchases, and, in fact, every form and description of business paper in use. He writes and receives letters pertaining to all affairs of the business, and secures a first-class drill in correspondence. He is taught to brief and file every business paper received. His work covers the entire range of business transactions, from the simplest to the most difficult.

In the theoretical work the student is made familiar with the first principles of the science of bookkeeping. He is guided carefully until he can master the simpler forms of the daybook, journal, cash-book, and ledger, and can post and close his books correctly. Frequent exercises in journalizing and closing ledgers are given for class drill. In the advanced bookkeeping the student will gradually be required to master all forms and sets of books in the various lines of business, which include partnership, joint stock companies, corporations, etc.

A rigid inspection and examination of books and papers relating thereto, is frequently made and under no condition will work be passed and credited unless it is strictly up to the required standard.

The office department consists of a national bank, a state bank, a wholesale and retail mercantile business, and a commission office; also facilities for a commercial exchange, and is equipped with books, modeled after those used by large concerns, which are kept by the students. The student has from

six to twelve weeks' office practice before entering the final examinations.

The average student will complete the bookkeeping in one school year, after which, if capable in other directions, he will be able to do the accounting work required in any business office.

Commercial Law.—The need for a thorough understanding of the underlying principles of this subject, on the part of those who expect to become identified with the practical world of affairs, is patent to every prudent business man and woman. To meet this requirement a thoroughly systematic and comprehensive course of instruction is offered with the end in view of preparing the student for the exacting demands of modern commercial life. A study of the business laws and customs of foreign countries with which we have interests in common is included in this course, which continues during the winter and spring terms of the Senior year. The work of the text is supplemented by lectures on current topics of general interest having a direct bearing upon the subject.

Commercial Geography.—In this age of industrial achievement and commercial advancement, in which the United States plays so important a part, a knowledge of the conditions surrounding the growth of the Nation as a commercial and maritime power is indispensable. During the fall term of the Senior year the student devotes five hours per week to this interesting topic, which includes a study of "the **natural resources and productions of the earth; of the distribution of products; of routes of commerce and lines of transportation; and of markets and manufactures,**" including such subjects as Domestic, Colonial, Foreign and Carrying Trade. Adam's text-book of **Commercial Geography** is used, added to which the well selected library of the College, the publication of the **National Geographic Society**, and the copious maps of the department, serve to make this delightful study a wellspring of absorbing interest and a never-ending source of profit.

Commercial Arithmetic.—Mathematical accuracy and rapidity are necessary in the present business life. To teach the student to compute correctly and rapidly is the aim of this work. Daily classes are conducted throughout the Junior year, in which all practical short methods are taught.

Penmanship.—Penmanship is taught in an interesting and systematic manner. No branch of study in a business education is of greater importance. One of the best recommendations in securing a position is a good strong business handwriting. No waste of time is allowed in useless flourishes, the student being compelled to learn a clear, legible rapid business hand, such as strikes the mind of the business man as at once the most practical. A complete drill in pen-holding, position and movement is given.

Expense.—Tuition is free. All books and stationery for the two years' course need not cost to exceed \$25. Board and lodging at from \$3 to \$4 per week; club board at reduced rates.

Advantages.—1. Free tuition. 2. Text-books and all stationery sold at cost. 3. A specialist in charge of each class. 4. First-class office equipments for actual business. 5. The large library, museum, College associations and laboratories open to students. 6. Military drill. 7. The students, being under the direct influence of the College, receive culture and obtain privileges that cannot be equalled.

Requirements for Admission.—Candidates for admission must be graduates of accredited high schools and at least fifteen years of age.

Students who complete the second Sub-Freshman year are admitted into the Junior class without examination.

Credit is given for advanced work.

Diploma.—Students who complete the two years' course will receive a diploma.

MILITARY DEPARTMENT

The importance of military training, both to the individual and the State, is so apparent that comment thereon is here unnecessary, further than to say that the physical training and development alone is sufficient proof of its benefits. The growing demand for military instruction in connection with school work, and the fact that the State Agricultural College is the only state institution where such a department exists, has led the authorities to make the work as thorough as practicable.

For instruction the cadets are formed into companies and the companies form a battalion. Each company has a captain, two lieutenants, five sergeants and five corporals. The officers and non-commissioned officers are selected from those in the higher classes showing the most proficiency in the work.

The work in the fall term embraces the school of the soldier, company and battalion in close order. Battalion drills are continued at intervals throughout the year. Extended order drill is taken up in the winter term and continued the spring term. This includes skirmishes and battle exercises in platoon, company and battalion; advanced guard, rear guard and outpost duties. Inspections, battalion parades, guard mounting and street parades are occasionally given. Inspections are given at such times as to insure the proper care of the equipment. All military exercises are performed in accordance with the United States Drill Regulations.

Practice in Artillery drill is had during the spring term. This is instruction in the school of the cannoneer, unmounted, and is in accordance with United States Artillery Drill Regulations.

The signal corps does practical work in transmitting messages, both by means of signal flags and with heliographs. The systems used are the same as those used in the Government service.

During unfavorable weather theoretical instruction is given, with occasional drills in the manual of arms, which can be executed by the battalion as a whole, within the armory.

The military encampment, held at the close of the school year, affords an excellent opportunity for further instruction in

all the duties of the soldier in camp and garrison. To fully carry out this plan in accordance with regulations, the College Battalion has access to the camp and garrison equipage of the State Militia.

The Department is equipped with 250 cadet rifles, belts, cartridge boxes, bayonets and scabbards; two 3-inch rifled field pieces; National and Battalion colors; swords for officers; signal flags and heliographs; drums and trumpets for a field band of fourteen members.

Regular Military encampments are held at least every two years. This is considered a part of the college work and the attendance of the cadets upon these outings is compulsory.

BATTALION ROSTER FOR 1903-4.

STAFF.

R. A. Maxfield	.....	Commandant
R. W. Todd	.....	1st Lieutenant Co. A., Acting Adjutant.
W. J. Morgan	.....	Sergeant Major
Willet Barton	.....	Chief Musician
F. S. Fobes	.....	Color Sergeant
E. C. Neff	.....	Drum Major

COMPANY A.

J. O. Thistle	.....	Captain
C. W. Kortz	.....	2nd Lieutenant
E. P. Riddell	.....	1st Sergeant
W. A. Harris	.....	Sergeant
Geo. Neel	.....	Sergeant
Robert Cooper	.....	Sergeant
J. Burke, B. Counter, V. Guthrie and P. Petty	.....	Corporals

COMPANY B.

L. C. Graves	.....	Captain
Howard Snedden	.....	1st Lieutenant
R. K. Fuller	.....	1st Sergeant
R. B. McLain	.....	Sergeant
J. C. Counter	.....	Sergeant
J. J. Girardet	.....	Sergeant
B. M. Mathias	.....	Sergeant
C. L. Olson, W. H. Pickett	.....	Corporals

COMPANY C.

H. V. Hubbell Captain
 Ansel Harding 1st Lieutenant
 Bert Snow Sergeant
 G. A. Wright Sergeant
 E. W. Thayer Sergeant
 W. T. Carver, H. F. Wilson, J. Woods and N. J. Miller Corporals.

COMPANY D.

R. L. Parshall Captain
 E. W. Newsom 1st Lieutenant
 C. R. Marshall 2nd Lieutenant
 E. J. Iddings Sergeant
 G. P. Weldon Sergeant
 A. G. Fisk Sergeant
 L. Snively Sergeant
 L. C. Gilbert, P. Killgore, C. Goodrich, F. Turner and Coy
 Klingler Corporals

LIBRARY

The College Library was founded in 1878 by donations from the members of the faculty and interested citizens of Fort Collins, aided by a small purchasing fund derived from the one-fifth mill tax.

The Library is supported by purchasing funds made for the Library directly and for the books of the departments. This is derived from the funds of the College. In addition there is a fund known as "The Annie Jones Fund," from the name of the donor, which yields a small annual income. This Annie Jones Fund is carefully used for books that will be a shelf memorial to the fund.

The library contains nearly 20,000 volumes and about 5,500 pamphlets (a part of which is the Experiment Station Library), and is classified. (Decimal.)

The reading room is well supplied for the present, but lack of floor space is a serious hindrance to its use.

The catalogue of the Library is a simple dictionary card catalogue and is made for student use.

The private library of Dr. Aylesworth has been placed in the main building of the College, and is a good scholar's library. It is especially rich in modern literature and is an unusually large private library. It is a well-balanced collection of books and is extremely useful to the advanced students, who have special privileges in it, granted by the President.

The College Library is open from 7:30 a. m., until 6:00 p. m., except Saturdays, holidays and Sundays. On Saturday the Library is open from 8 to 4 and on holidays as the occasion demands.

The Library may be called a typical College Library, as it stands, with a large collection in history and literature, but as this library will not remain as it now is, it may be better to describe the plan and the future of the Library.

The Library is an institution within an institution and grows to the limit of the response of its environment. The Library should be a help to the student at every turn in College and is to be judged by its service; if it helps it is a good library, and if not, it is a poor library. The College Library has re-

sponded to the call from the student body, and the College has responded to the call for support, until the library has completely outgrown its present quarters and overflowed into other rooms. As soon as the new building for the department of Civil and Irrigation Engineering is completed, the Library will be moved into a building all its own, which will provide floor space for a reading and reference room, for the stack room and for the use of the apprentices and the classes in Library Science and Library Handicraft.

In this building we shall have the best scientific Library in the West, and shall be able to do things that will give the college within the next five years a collection of 25,000 or 30,000 volumes.

Systematic instruction in library science more than library apprenticeship has been begun and we expect to furnish well trained library workers. Information concerning this course in library science will be furnished on application.

We are prepared to furnish competent cataloguers and assistants for private libraries, school libraries and public libraries and to correspond with librarians or library boards.

Two of the present class are preparing for the library schools at Albany and Brooklyn (Pratt) and we have received requests for information from others who wish to prepare here in Colorado or in the East.

The long list of periodicals usually printed in the catalogue and covering ten pages, has been enlarged beyond the available space of this publication. The list now contains 350 titles without counting the publications of the states of the Union and the United States government; but no list can quite cover the ground which may be well described as departmental affiliations, and which are especially rich. Our departmental libraries take on most of their professional value from faculty association and the wide acquaintance of the faculty members with the professional world in engineering, agriculture, commerce, domestic science, biological and natural sciences and their applied forms in the work here.

This library will enter upon some active plan of extension work soon, but the plans are not definitely known at this time. Meanwhile we shall be glad to help where we can, although our small floor space is a great disadvantage in our progress.

ALUMNI ASSOCIATION.

The Alumni Association of the State Agricultural College enumerates about two hundred graduates of the school among its members. The object of the organization, as set forth in its constitution, is to promote the interests of the Agricultural College of Colorado and to perpetuate a fraternal spirit among the graduates of the school.

The annual reunion and banquet of the Association occur at the College during commencement week.

Officers are elected at the annual meeting. Offices are maintained at the College.

Officers for 1903-04:—

President	Mrs. A. Beebee, Fort Collins, Colorado
Vice President.....	Ralph H. Hess, Fort Collins, Colorado
Secretary	Mrs. Frank Woods, Fort Collins, Colorado
Treasurer.....	Charles J. Gilkeson, Fort Collins, Colorado

ALUMNI DEBATING ASSOCIATION.

A debating association is maintained among the graduate members of the "pioneer" literary societies of the College—Philo Æsthesian and Columbian societies. The debate names an important date of commencement week.

Officers for 1903-04:—

President.....	Earl Douglass, Fort Collins, Colorado
Vice President.....	B. G. D. Bishopp, Fort Collins, Colorado
Secretary	Frank H. Thompson, Denver, Colorado
Treasurer.....	Ralph H. Hess, Fort Collins, Colorado

COLLEGE ORGANIZATIONS

LITERARY SOCIETIES.

There are eight student societies connected with the College. Meetings are held weekly throughout the school year. Students are admitted to these societies by vote of the members. The fees and dues are not burdensome.

"The Philo-Æsthesian Society" meets in the College Chapel. "The object of this Society is to encourage free investigation and to promote growth in literary composition with readiness and fluency of speech."

"The Columbian Literary Society" meets in Horticultural Hall. "This Society is organized to train its members in literary work, to instruct them in parliamentary law, and to promote their growth in general knowledge."

"The Athanæum Literary Society" meets in the lecture-room in the Civil Engineering Building. Its purpose is, "to advance the literary culture of its members, give them proficiency in debate, and train them in parliamentary law."

"The Agricultural Club" meets in Agricultural Hall on Friday evening of each alternate week. It is composed largely, though not exclusively, of students taking the Agricultural course, graduates of the College, and instructors connected with the various departments doing work in Agriculture and allied subjects. Its object is to promote the study of the practical problems in agriculture.

"The Forensic Club" meets bi-weekly in "Commercial Hall." Its membership is limited to twenty-five members. It not only prepares debates among its own members, but has arranged for a number of intercollegiate debates. Its sessions are closed. Close attention is given to parliamentary practice.

"The Lyceum" was organized and began its work at the beginning of the spring term, 1904. Meetings are held bi-weekly. The membership is composed exclusively of students of the sub-freshman classes. The work of the organization is subject to the council of a member of the faculty chosen as Mentor by the society. The object of the Lyceum is so to develop its members in literary ability that they may enter the older societies

well prepared to maintain a high literary standard in the student body.

"The Civil Engineering Society" meets bi-weekly in Civil Engineering Building. Its purpose is to present the literary side of their important technical work and to keep a record of the doings of the department.

"The Domestic Science Club" meets bi-weekly in Domestic Science Building. Its purpose is to cultivate the art of expression relative to the home and social problems of the time.

Nowhere does the Literary Society stand for more than in the Agricultural College. It forms an important part of college life and helps to put into concrete form the investigations of the class room.

The exercises of the forum and the reading table give the student a wider horizon, a widening consciousness of his own powers, and an ease in both conversation and public address.

The College takes unusual pride in the zest and finely tempered rivalry of these societies, regarding them as important co-workers in the upbuilding of the school.

ORATORICAL ASSOCIATION.

This Association was organized in 1892. Its object is to encourage the study and practice of oratory in the College. Students registered in any of the four higher classes may be admitted to membership by vote of the Association.

The Association holds three contests each year; one for the members of the Sophomore and Freshman classes, another for the members of the Senior and Junior classes, and a third for the members of the Senior and Junior classes of the Commercial Department.

Three medals are awarded each year; one of gold to the successful orator in the Senior-Junior contest, and one of silver to the Sophomore-Freshman orator taking first rank, and one of silver to the first rank in the Commercial contest.

The orations are passed upon by two sets of judges; one on thought and composition and the other on delivery.

This organization is associated with similar associations in the three other leading institutions of higher learning in the state, in the State Oratorical Association. Under the direction of the latter organization occurs an annual intercollegiate oratorical contest by which selection is made of Colorado's repre-

sentative at the annual interstate contest among the winning contestants of the state organizations of Indiana, Ohio, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, and Colorado.

NATURAL SCIENCE CLUB.

This Club was organized by the members of the Faculty and students of the College in March, 1889. The object of the organization is to keep its members informed upon recent advances in science, and especially to interest students in scientific subjects and to encourage them in making original observations. Meetings are held monthly and are open to all who can attend.

Y. M. AND Y. W. C. A.

This non-sectarian religious movement has had a providential growth in the colleges of the world.

The student mind has long been wearied by the endless discussions of creeds and the effort to dogmatize every being and every principle in the universe. But no mind turns so eagerly to devotion of a rational quality and to a life of humanitarian service, as does the mind of the modern student. Witness the course of college movements for the betterment of society and the intense interest manifested by students in sociological problems.

The student's pulse beats fast beneath any heavenly vision that calls him to a wider knowledge and to a nobler appreciation of human worth. Every phase of modern science and philosophy tends to make him reverent and helpful to his fellows.

These two Christian Associations, one for young men and the other for young women, have come into college life for the two-fold purpose of enriching the faith of the individual student and unifying the student body for clean living, a tolerant bearing toward all conditions of life, and the making of a home feeling in the heart of the young man or young woman away from home the first time.

Special emphasis is laid upon unbiased Bible study in groups

The College authorities have given these organizations a or circles.

permanent home in the Main College building. It was furnished by the Young People's Church Societies of Fort Collins.

THE PROHIBITION CLUB.

The Prohibition Club, recently organized, receives the universal support of the student body. Its work among the students and the young people of the city is most commendable. The Club holds an annual oratorical contest which is an important event of the College calendar.

THE SAN JUAN BOARDING CLUB.

In 1894 a small number of students, feeling themselves unable to pay the rates demanded for board at private boarding houses, resolved to organize themselves into a boarding club, and to divide the expense ratably among themselves. They accordingly chose their officers, raised a common fund, rented quarters, hired a cook, and proceeded to exemplify anew the American capacity for self-government. By careful business management they succeeded in procuring excellent board at about two-thirds to three-fourths of the rates they had theretofore been compelled to pay. The club prospered from the start, and has continued to furnish board to as many members as its quarters could accommodate. Under the club management the students determine the bill of fare, purchase the materials and pay their cook for serving them. "Kicking on the grub," is thus relegated to the museum of antiquities. By conducting their business upon a strictly cash basis the club secures its supplies at the lowest market prices, and it is to careful financial management that the club's success is to be attributed.

So successful has the club been that it was last winter determined to reorganize it, enlarge its scope and incorporate it under the laws of the state as a corporation. The co-operative principle is still at the basis of the Association. It is purposed to build a home for the members of the corporation while they are students of the college, in order to relieve somewhat the increasing difficulty of finding suitable quarters in the vicinity of the College.

Beginning in September, 1904, The San Juan Club will conduct two boarding houses, both located conveniently. These two boarding houses will accommodate about 100 members. Persons desiring to reserve places at the tables of this association may do so by mailing to The San Juan Club their applications, accompanied by the membership fee of one dollar. Such reserva-

tions will be good for the first five days of the College term, at the expiration of which time the reservation will lapse unless further arrangements are made.

ATHLETIC ASSOCIATION.

The object is to promote the physical well-being of the members and to afford such gymnasium and field practice in athletic games as will enable the chosen representatives to participate with credit in intercollegiate contests.

It is the opinion of the Faculty that whatever excesses there may be in college athletics may best be held in check by sympathetic rather than repressive government.

There are two members of the Faculty on the Board of Directors whose business it is to direct, not to discourage, athletic achievements at home and with other colleges.

The college athlete of to-day is neither a coward nor a dullard; he is both manly and studious.

COLLEGE PAPER.

In December, 1891, the first number of The Rocky Mountain Collegian appeared. Since September, 1901, the paper has appeared regularly twice a month. The columns of the Collegian are filled with bright, newsy, instructive matter. The paper is a mirror of student life at the College. It is creditably conducted and is worthy the support of every student, alumnus, official and patron of the College.

C. A. C. MILITARY BAND.

The Military Band of thirty pieces is an important adjunct to the Cadet Battalion. This organization receives daily instruction by a competent band master throughout the College year and ranks among the best concert bands of the State. The College Band takes part in all local parades, military and civil, renders semi-monthly concerts in the chapel during the Spring Term, and will fill a special summer engagement at City Park of Denver.

GLEE CLUBS.

A Glee Club and Male Quartette under the direction of Mr. H. W. Murray, and a Ladies' Glee Club, directed by Mr. Frank H. Ormsby, add much to the strong musical combination of the school. These organizations present rare opportunities for musical culture which should assume an important part in a collegiate education.

GENERAL INFORMATION

Admission.—Students are admitted to the College according to the following statute: “No student shall be admitted to the Institution who is not fifteen years of age and who does not pass a satisfactory examination in arithmetic, geography, grammar, reading, spelling and penmanship.” Therefore pupils who have completed the eighth grade may become candidates for the first Sub-Freshman class. Students presenting eighth grade diplomas or certificates of standard excellence may be admitted without formal examination, except such as come from towns having accredited High School. These must pass examination in above-named studies. Students not possessing such credentials may be admitted upon satisfying the committee on examinations.

The requirements for admission to the first Sub-Freshman class are those required for entrance to the best high schools. Those who have finished the ninth and tenth grades in a satisfactory manner will be admitted to the second Sub-Freshman year.

Students admitted to the first Sub-Freshman class shall maintain a minimum grade of seventy per cent. in at least two studies during the succeeding term or be required to discontinue College work.

Students are admitted to the Freshman year after thorough examinations taken in the subjects contained in the first and second Sub-Freshman years, or upon the presentation of certificates of graduation from accredited high schools. Certificates from schools not accredited may be considered in arranging for entrance examinations. The following schools are accredited:

Denver High School, District No. 1.

Denver High School, District No. 2.

Colorado Springs High School.

Greeley High School.

Aspen High School.

Durango High School.

Canon City High School.

Georgetown High School.

North Denver High School.

Pueblo High School, District No. 20.

Pueblo High School, District No. 1.
Fort Collins High School.
Boulder High School.
Golden High School.
Trinidad High School.
Grand Junction High School.
Cheyenne (Wyoming) High School.
Denver Manual Training High School.
La Junta High School.
Idaho Springs High School.
Central City High School.
Longmont High School.
Montclair High School.
Fort Morgan High School.
Cripple Creek High School.
Victor High School.
Leadville High School.
Monte Vista High School.
Salida High School.
South Denver High School.
Las Animas High School.
Lamar High School.
Florence High School.
South Canon High School.
Saguache County High School.
Sterling High School.
Loveland High School.
Douglas County High School (Castle Rock).
Wheat Ridge High School (Alcott).

Candidates for advanced classes or work will be admitted by examination, or certified standing from schools having an equivalent grade of work, or both.

Applicants appearing late in the College year will be required to pass, in addition to the entrance examination, a further examination in the work already passed over by the class they desire to enter.

Regular and Special Courses.—Unless there are strong and excellent reasons for it, students will not be allowed to take a special course of study; and, in case it is allowed, the student must show that he is well qualified to pursue the studies selected, by passing such examinations as the Faculty may assign.

No student will be allowed to change his course during the progress of a term, or will he be allowed to drop a study unless by permission of the Faculty.

All applications for special courses of study must be made to the Chairman of the Committee on Examinations, by mail or otherwise, at least two days before the opening of the term. Except under unusual circumstances, it will be useless for any person to apply for a special course of study involving less work than is required of the students in the regular course.

Registration.—The first three days of the college year are devoted to examination and registration. New students will be met at the trains by Committees of young men and women from the Y. M. and Y. W. C. A., who will take them to the College at once for registration, and will assist them to find good homes and open for them the doors of college life.

Grades.—In September, 1899, the passing grade was raised from 65 per cent. to 70 per cent. All students who fail to make a standing of 55 per cent. shall be considered "failed," and shall be required to take the subject over again in class. Those making a standing of more than 55 per cent, and less than 70 per cent. shall be considered as "conditioned" and shall be allowed **one special examination** before the subject is again taught by which they may try for a passing grade of 70. In cases of a study extending over two or more terms the student, if he has an average of 55 per cent. may be allowed to continue with his class, but must finally make a grade of 70 per cent. in **one special examination** in each term. If he falls below 55 per cent. in average at the end of a term he will be dropped from the class and be required to take a lower subject.

Students who, by reason of protracted sickness, shall be absent for as much as two-fifths of the term, shall be entitled to a special examination on the work done during the time of their absence.

All recitations missed, whether the absence be excused or not, shall be made up at the earliest convenience of the professor in charge. Unexcused absences are met with severe discipline.

Any student who shall have a term standing of 90 per cent. may be exempted from examination and his term standing shall be his term average.

Its church privileges are many and of the most refining and helpful quality. While students are not required to report church attendance, they are encouraged to cultivate the religious side of their natures. An afternoon service is held at the College every Sunday.

Military Drill.—All male students are required to procure a uniform immediately after registration, costing about \$15.00, and to drill three hours each week. This, of itself, is a training in physical bearing and a discipline leading to promptness and obedience. The ladies have a daily drill in physical culture. Opportunities are afforded during the year for a public exhibition of physical culture.

Military drill is elective on the part of Seniors who have maintained membership in the cadet battalion at least three years.

The end in view in establishing the Agricultural College was to train the heart, the head and the hand—the trinity of the new education. To make practical men and women for the work world, in field, shop, office and home; to make energetic, patriotic citizens; through its Faculty and students to develop the best resources of this great commonwealth.

GYMNASIUM PRACTICE.

There is nothing more necessary to the health and general welfare of the student than daily, systematic exercise. The mental strain and physical inactivity of the classroom must be balanced by vigorous muscular effort, or the health will suffer.

To this end, a commodious Gymnasium has been erected, fully equipped with the best apparatus, and furnishing opportunity for every kind of gymnastic work.

A certain amount of work is required of each student. This is given under the direction of a competent instructor and is carefully graded to suit individual needs. All straining or violent exercises are avoided; the effort being to bring the pupil gradually from lighter to heavier exercises without overtaxing the strength of the student. Methods in use include the Swedish and Ralston systems, the Delsarte (for ladies), club swinging, dumb-bell drill, and the use of floor apparatus, rings, etc. Measurements taken by the anthropometrical system provide correct records of each student's progress.

The Gymnasium is also equipped for various indoor sports, a regulation basket ball court being one of its features.

All female students are required to provide themselves with the regulation gymnasium suits. These must be ready for use within one month after the opening of the College year. Students wishing to make their suits before the opening of the term may secure directions by addressing the Dean of Women at the College.

REGISTER OF STUDENTS AND GRADUATES

GRADUATE STUDENTS.

Alfred, Fred C., B.S., '97; Chemistry; Candidate for degree of M.S.	Fort Collins, Colorado
Baker, Leroy A., B.S., '01; Mechanical Engineering; Candidate for degree of M.E.....	Fort Collins, Colorado
Boothroyd, Samuel L., B.S., '93; Astronomy; Candidate for degree of M.S.....	Fort Collins, Colorado
Douglass, Earl, B.S., '00; Chemistry; Candidate for degree of M.S.	Fort Collins, Colorado
Hess, Ralph H., B.S., '97; Economics; Candidate for degree of M.S.	Fort Collins, Colorado
Lane, Nobel D., Commerce.....	Laporte, Colorado
Langridge, Fred N., B.S., '03; Mechanical Engineering; Candidate for degree of M.E.....	Boulder, Colorado
Prendergrast, Mary E., B. S., '97; Domestic Science.....	Fort Collins, Colorado
Rolfs, Fred M., B.S., candidate for degree of M. S.....	Fort Collins, Colorado
Richardson, Robert E., B.S., '02; Civil Engineering; Candidate for degree of C.E.....	Fort Collins, Colorado
Tharp, Florence A., B.S., '03; Domestic Science.....	Laporte, Colorado

SENIOR CLASS.

Barkley, May.....	Fort Collins, Colorado
Bartels, Loranus M.....	Pueblo, Colorado
Beach, Nellie.....	Fort Collins, Colorado
Burnheimer, Charles W.....	Breckenridge, Colorado
Cushing, Gardner R.....	Fort Collins, Colorado
Estes, L. Cale.....	Gunnison, Colorado
Graves, Leonard C.....	Bloomfield, Colorado
Hadley, Frank L.....	Honolulu, Hawaii
Harding, Ansel	Fort Collins, Colorado
Hotchkiss, Clair E.....	Hotchkiss, Colorado
Hubbell, Horace.....	Fort Collins, Colorado
Jones, Charles R.....	Port Williams, Washington

Kissock, Jessie L.....	Fort Collins, Colorado
Morton, George E.....	Whitewater, Wisconsin
Newsom, Ernest I.....	Valley Mills, Indiana
Nichols, Fred C.....	Trinidad, Colorado
Parshall, Ralph	Creswell, Colorado
Prendergast, Mattie.....	Fort Collins, Colorado
Sankey, Grace E.....	Fort Collins, Colorado
Schureman, Ethel M.....	Fort Collins, Colorado
Sneddon, Howard.....	Salida, Colorado
Stuver, Emma N.....	Fort Collins, Colorado
Thistle, John O.....	Grand Junction, Colorado
Todd, Ralph W.....	Grand Junction, Colorado
Zenor, Perry.....	Fort Collins, Colorado

JUNIOR CLASS.*

Hosea, Ralph G.....	Denver, Colorado
Mulder, Peter J.....	Colorado Springs, Colorado
Prien, O. L.....	Phoenix, Arizona

SOPHOMORE CLASS.

Akins, Fred W.....	Humansville, Missouri
Bonnett, Louis L.....	Fort Collins, Colorado
Cooper, Robert.....	Fowler, Colorado
Counter, James C.....	Brighton, Colorado
Dauthitt, Stephen J.....	Montrose, Colorado
Fisk, Alexander G.....	Colorado Springs, Colorado
Garbutt, Edna.....	Fort Collins, Colorado
Girardet, James J.....	Delta, Colorado
Gorske, Paul.....	Poekava, Russia
Iddings, Edward J.....	Peru, Indiana
Kortz, Bruce C.....	Fort Collins, Colorado
Marshall, Charles R.....	La Junta, Colorado
Mathias, Bert.....	Monte Vista, Colorado
Morehouse, Arthur.....	Lamar, Colorado
Phelps, Harvey J.....	Fowler, Colorado
Riddell, Earle P.....	Denver, Colorado
Shepperd, Parker D.....	Littleton, Colorado
Snively, Littell.....	Goes, Ohio
True, Harry A.....	Denver, Colorado
Weldon, George P.....	Loveland, Colorado
Wirt, Laura.....	Fort Collins, Colorado
Wright, Robert J.....	Greeley, Colorado

*No regular Junior class on account of change in course.

FRESHMAN CLASS.

Acker, Frank W.....	Canon City, Colorado
Adams, Otto O.....	Monte Vista, Colorado
Alexander, C. Milton.....	Denver, Colorado
Ayres, Thomas W.....	Fort Collins, Colorado
Bailey, Clarence E.....	Southport, Indiana
Batten, Albert H.....	Denver, Colorado
Birkhahn, Jacques.....	New York City
Brissenden, Louis H.....	University Park, Colorado
Burke, James E.....	Imperial, Nebraska
Cass, William A.....	Lyons, Nebraska
Counter, Benjamin F.....	Brighton, Colorado
Culver Carl A.....	Athens, Illinois
DeLappe, Birch W.....	Denver, Colorado
Dougherty, Edwin W.....	Fort Collins, Colorado
Dougherty, Myrtle.....	Fort Collins, Colorado
East, Herschell J., Jr.....	Denver, Colorado
Fleshman, Harte B.....	St. Joseph, Missouri
Fuller, Robert K.....	Fort Collins, Colorado
Giller, Henry M.....	Whitehall, Illinois
Gilbert, Louis C.....	Fowler, Colorado
Goldhammer, Max	Denver, Colorado
Guthrie, Vincent R.....	Rocky Ford, Colorado
Guthrey, Samuel E.....	Denver, Colorado
Hall, Frank P.....	Fort Collins, Colorado
Harris, William A.....	Basalt, Colorado
Hayward, Harry H.....	Loveland, Colorado
Henderson, Gus.....	Glenwood Springs, Colorado
Jenkins, Will J.....	Pueblo, Colorado
Kennedy, George O.....	Monte Vista, Colorado
Kennedy, Lynn.....	Grand Junction, Colorado
Laughlin, A. R.....	LaSalle, Colorado
McLean, Robert B.....	Cripple Creek, Colorado
Mienzer, J. Ford.....	Monte Vista, Colorado
Miller, Claude I.....	Atlanta, Illinois
Montgomery, Lewis M.....	Fort Collins, Colorado
Neel, George M.....	Eaton, Colorado
Olson, Clarence L.....	Cripple Creek, Colorado
Osborne, Robert S.....	Scranton, Iowa
Petty, Fred L.....	Curtis, Nebraska

Poole, Thomas S.....	Denver, Colorado
Pumpelley, Everett E.....	Atlanta, Illinois
Putnam, Wilton L.....	Orchard, Colorado
Ragan, Fred H.....	Denver, Colorado
Ricketts, Hubert P.....	Fort Collins, Colorado
Riddell, Harvey W.....	Denver, Colorado
Rosenburg, William F.....	Glenwood Springs, Colorado
Rosenberger, George W.....	Delta, Colorado
Roullard, Felix.....	Fort Collins, Colorado
Sisac, Renna	Mesa, Colorado
Smith, Burton A.....	Grand Junction, Colorado
Smith, Irving J.....	Redstone, Colorado
Snow, Bert A.....	Fort Collins, Colorado
Spitzer, Ray C.....	Fort Collins, Colorado
Springsteen, Frank	Denver, Colorado
Sylvester, John J.....	Monte Vista, Colorado
Symons, Harold W.....	Laramie, Wyoming
Thomas, John L.....	Georgetown, Colorado
Turner, John.....	Edgar, Nebraska
Turner, Hazel D.....	Atlanta, Illinois
Veazey, Carl.....	Fort Collins, Colorado
Wallace, Stewart O.....	Fort Lupton, Colorado
Wheeler, William H.....	Imperial, Nebraska
Wilson, Harley F.....	Victor, Colorado
Wing, Delbert.....	Monte Vista, Colorado
Worthington, Jesse K.....	St. Louis, Missouri

SECOND SUB-FRESHMAN CLASS.

Allen, Blanche E.....	Fort Collins, Colorado
Anderson, Arthur	Kokomo, Colorado
Anderson, Alfred A.....	Columbus, Nebraska
Andrews, Ira.....	Fowler, Colorado
Anderson, Will E.....	Rocky Ford, Colorado
Barklow, Robert W.....	Denver, Colorado
Benedict, Thadeus P.....	Castle Rock, Colorado
Bloomfield, A. J.....	Meeker, Colorado
Cash, Cornelia.....	Fort Collins, Colorado
Chambers, Gerald S	Greeley, Colorado
Chatfield, Roy E.....	Gypsum, Colorado
Cole, Waldo.....	Cripple Creek, Colorado
Couch, Edmond	Littleton, Colorado

Earl, Frank J.....	Fort Collins, Colorado
Falloon, Elisha A.....	Laporte, Colorado
Fobes, Anna G.....	Virginia Dale, Colorado
Fowler, Chester L.....	Canon City, Colorado
Frances, Ethel	Laporte, Indiana
Gifford, May.....	Fort Collins, Colorado
Gooding, I. G.....	Box Elder, Colorado
Graves, George	Bloomfield, Colorado
Gray, C. Annabel.....	Fort Collins, Colorado
Gray, William J.....	Fort Collins, Colorado
Green, Albert	Eagle, Wisconsin
Gross, John L.....	Amethyst, Colorado
Hamilton, Martin	Longmont, Colorado
Harris, Nettie	Carbondale, Colorado
Heath, Charles D.....	Guthrie Center, Iowa
Herrick, Robert S.....	Littleton, Colorado
Heringa, Edward	Fort Collins, Colorado
Hice, Roy	Fort Collins, Colorado
Huffman, Lillie E.....	Evans, Colorado
Jay, Rodney F.....	Grand Junction, Colorado
Keeler, Clarence B.....	Boulder, Colorado
Kelker, Harry.....	Glenwood Springs, Colorado
Kemp, Walter F.....	Fort Collins, Colorado
Killgore, Perry J.....	Fort Collins, Colorado
Klingler, Coy E.....	Grand Junction, Colorado
Kouns, Alvin P.....	Rocky Ford, Colorado
Kouns, Edwin H.....	Rocky Ford, Colorado
Kreutzer, George C.....	Sedalia, Colorado
Larsen, Elsie.....	Fort Collins, Colorado
Loud, Clifton C.....	Cripple Creek, Colorado
MacCollister, Thoroman.....	Monte Vista, Colorado
McGowan, Florence E.....	Fort Collins, Colorado
McMillan, Charles	Fort Collins, Colorado
Lamb, Arthur C.....	Fort Collins, Colorado
Miller, N. Jay.....	Fort Collins, Colorado
Nash, Clyde H.....	Georgetown, Colorado
Officer, Charles C.....	Cleburne, Texas
O'Rourke, James J.....	Victor, Colorado
Philips, David E.....	Denver, Colorado
Piatt, Jessie C.....	Fort Collins, Colorado
Roach, David J.....	Sedalia, Colorado
Rosenburg, Karl D.....	Glenwood Springs, Colorado

Roullard, Fred P.....	Fort Collins, Colorado
Runge, William E.....	Denver, Colorado
Russell, Warren H.....	Fort Collins, Colorado
Salisbury, George R.....	Slater, Colorado
Sanford, George R.....	Denver, Colorado
Seaman, Harold	Loveland, Colorado
Sisac, Roy R.....	Mesa, Colorado
Skinner, Floyd H.....	Denver, Colorado
Stickley, Don W.....	Leadville, Colorado
Stidger, Willis	Fort Collins, Colorado
Strachan, James	Fort Collins, Colorado
Strang, Robert M.....	Timnath, Colorado
Stuver, Don W.....	Fort Collins, Colorado
Swink, Claude.....	Rocky Ford, Colorado
Swope, William W.....	Fort Collins, Colorado
Thomas, Will.....	Glenwood Springs, Colorado
Thornton, Stuart M.....	Loveland, Colorado
Turnquist, Robert.....	Wyconda, Missouri
Tuttle, Anna M.....	Boulder, Colorado
Tyler, Will A.....	Fort Collins, Colorado
Urbahns, Theodore D.....	Minden, Iowa
Van Zant, Charles R.....	Longmont, Colorado
Ve Verka, Anton.....	Sterling, Colorado
Wadsworth, Roy E.....	Grand Junction, Colorado
Watts, William E.....	Fort Collins, Colorado
Welch, Mamie.....	Fort Collins, Colorado
Wilson, Carlos.....	Rocky Ford, Colorado
Woods, Edmond P.....	Farmington, New Mexico

FIRST SUB-FRESHMAN CLASS.

Allen, James M.....	Lafayette, Colorado
Amos, Claude.....	Rocky Ford, Colorado
Anderson, Orion E.....	Delta, Colorado
Austin, Fred	Eaton, Colorado
Ayers, Vernon.....	Fort Collins, Colorado
Beffort, Xaver	Rico, Colorado
Blackstock, Edna.....	Fort Collins, Colorado
Blandin, Ethel J.....	Eaton, Colorado
Booth, Perley T.....	Harmon, Colorado
Brolliar, Roy A.....	Fort Collins, Colorado
Bump, Maude	Longmont, Colorado
Campbell, John.....	Pueblo, Colorado

Carner, Ray H.....	Fort Collins, Colorado
Carter, Edward W.....	Ault, Colorado
Casey, Boyd	Fort Collins, Colorado
Casey, W. George.....	Fort Collins, Colorado
Cavnah, Earl M.....	Denver, Colorado
Chavez, Simon M.....	Capulin, Colorado
Chedister, Raymond.....	Fort Collins, Colorado
Christiansen, Andrew	Fort Collins, Colorado
Christiansen, Gertrude	Fort Collins, Colorado
Cogshall, F. L.....	Cambridge, Iowa
Cornforth, Harvey	Elbert, Colorado
Covington, Metta	Fort Collins, Colorado
Crafts, Thurlow.....	Fort Collins, Colorado
Damm, Tina	Fort Collins, Colorado
Davis, Bertie L.....	Fort Collins, Colorado
Davis, Dalton	Fort Collins, Colorado
Diez, Minnie.....	Silver Cliff, Colorado
Dixon, Thomas J.....	Pueblo, Colorado
Dove, Percy G.....	Denver, Colorado
Dykeman, Maude.....	Fort Collins, Colorado
Edwards, May	Timnath, Colorado
Ehrler, Theodore	Denver, Colorado
Farnsworth, Nathaniel	Eaton, Colorado
Farr, Roscoe	Eaton, Colorado
Ferrin, Stanley	Delta, Colorado
Fobes, Ensley	Virginia Dale, Colorado
Fobes, Isaac	Virginia Dale, Colorado
French, Howard.....	Glenwood Springs, Colorado
Frey, Louis C.....	Pueblo, Colorado
Fullerton, Nora M.....	Fort Collins, Colorado
Goldsborough, Lee.....	Denver, Colorado
Grant, Wallace.....	Avondale, Colorado
Graves, Philip	Bloomfield, Colorado
Haberman, William.....	Wellington, Colorado
Hamlitzer, Catherin.....	Fort Collins, Colorado
Harkins, Henry A.....	Divide, Colorado
Harlan, George.....	Piedra, Colorado
Harris, Arthur B.....	Fort Collins, Colorado
Harris, G. Elton.....	Fort Collins, Colorado
Hartman, Bruce A.....	Gunnison, Colorado
Hawley, Ada	Fort Collins, Colorado
Heckert, Flossie F.....	Fort Collins, Colorado

Helm, Earl B.....	Syracuse, Indiana
Hening, Amanda. . .	Fort Collins, Colorado
Herz, Bernard	Goldfield, Colorado
Hinkle, Eleanor.....	Fontesque, New Mexico
Hodgell, William	Ault, Colorado
Holland, C. B.....	Iola, Colorado
Hutchinson, William C.....	Lake George, Colorado
Jones, Robert H.....	Harris, Colorado
Kern, Harry F.....	Timnath, Colorado
Kern, William A.....	Lamar, Colorado
Kessenger, Lee O.....	Edgewater, Colorado
Killgore, Loyd	Fort Collins, Colorado
Lamb, F. L.....	Fort Collins, Colorado
Lester, John	Loveland, Colorado
Littler, Ralph E.....	Fort Collins, Colorado
MacNichol, Kenneth	Durango, Colorado
McClair, Herbert E.....	Orchard, Colorado
McCormick, John R.....	Eaton, Colorado
McCracken, Edward J.....	Littleton, Colorado
McDonnell, Leona E.....	Byers, Colorado
McKay, Eugene	Fort Collins, Colorado
Mangun, Ira	Fort Collins, Colorado
Mangun, Mary A.....	Fort Collins, Colorado
Merrifield, Eben	Fort Collins, Colorado
Metcalfe, Mathew	Fort Collins, Colorado
Morgan, Dick	Arriola, Colorado
Morgan, Frank.....	Arriola, Colorado
Morgan, Harry.....	Arriola, Colorado
Morris, George E.....	Grover, Colorado
Morrison, Mark S.....	Denver, Colorado
Morrison, Samuel B.....	Denver, Colorado
Mosman, Ray	Walden, Colorado
Murray, Grace	Fort Collins, Colorado
Murray, Mecca L.....	Fort Collins, Colorado
Naile, Casper W.....	Raton, New Mexico
Nelson, Emily	Hooper, Nebraska
Norgaard, Ejnar	Edwards, Colorado
Nugent, Ellen M.....	Laporte, Colorado
Oberto, Henry	Georgetown, Colorado
Padfield, M. H.....	Lafayette, Colorado
Partridge, Ralph	Fort Collins, Colorado
Pence, Robert L.....	Ault, Colorado

Polhamus, Roy F.....	Littleton, Colorado
Portner, Roy	Hiawatha, Kansas
Reed, Myron W.....	Hastings, Nebraska
Richards, Grace W.....	Fort Collins, Colorado
Rickel, Burton F.....	Denver, Colorado
Rogers, James O.....	Maxwell City, New Mexico
Rosenbaum, Anthony	Louisville, Colorado
Ross, Evalyn	Platteville, Colorado
Salisbury, Earl	Slater, Colorado
Savage, Lee E.....	Maaher, Colorado
Schrader, Will H.....	Del Norte, Colorado
Schrock, Rolland	Fort Collins, Colorado
Schroeder, Herman	Fort Collins, Colorado
Schutz, Charles H.....	Bayfield, Colorado
Severance, Mary A.....	Eaton, Colorado
Shelton, Bertrum A.....	Rocky Ford, Colorado
Sherman, Jessie M.....	LaSalle, Colorado
Sopp, Francis J.....	Silver Plume, Colorado
Stauss, Dora K.....	Fort Collins, Colorado
Stidd, Elbert N.....	Los Angeles, California
Stidd, Lee C.....	Pitkin, Colorado
Storm, Florence B.....	Fort Collins, Colorado
Straub, Arthur	Denver, Colorado
Stuver, Deane	Fort Collins, Colorado
Thomas, Hugh B.....	Denver, Colorado
Thompson, Royal J.....	Berthoud, Colorado
Van Horne, John L.....	Rocky Ford, Colorado
Vansickle, Rex	Fort Collins, Colorado
Watts, Ira	Fort Collins, Colorado
Williams, William G.....	Delta, Colorado
Wilson, John.....	New Windsor, Colorado
Winter, John	Fort Collins, Colorado
Wolf, Robert	Fort Collins, Colorado
Woodhurst, Charles G.....	Fort Collins, Colorado
Woods, James A.....	Farmington, New Mexico
Wright, Edward K.....	Redstone, Colorado

SENIOR COMMERCIAL CLASS.

Bartels, Alice S.....	Pueblo, Colorado
Beers, Edith A.....	Fort Collins, Colorado
Bell, Stella	Fort Collins, Colorado

Calvert, Eva	Fort Collins, Colorado
Fobes, Frederic F.....	Virginia Dale, Colorado
Goodrich, Calvin.....	Fort Collins, Colorado
Hoffman, Myrtle G.....	Fort Collins, Colorado
Kissock, Emma	Fort Collins, Colorado
Pfalzgraf, Benjamin F.....	Cameron, Ohio
Thayer, Earnest W.....	Timnath, Colorado

JUNIOR COMMERCIAL CLASS.

Aylesworth, Merlin H.....	Fort Collins, Colorado
Barry, Alice	Fort Collins, Colorado
Carver, William T.....	Castle Rock, Colorado
Chatfield, Adaline A.....	Littleton, Colorado
Christman, Carl.....	Virginia Dale, Colorado
Cleave, Virginia.....	Estes Park, Colorado
Cunningham, Perry	Wray, Colorado
Cuthbertson, Helen.....	Fort Collins, Colorado
Geiger, Minnie.....	Fort Morgan, Colorado
Haxby, Blanche.....	Canon City, Colorado
Hayes, Isabelle E.....	Canon City, Colorado
Hubbard, Gladys	Longmont, Colorado
Jacobs, Emily A.....	Fort Collins, Colorado
McCabe, Mary A.....	Fort Collins, Colorado
Mauff, Robert D.....	Denver, Colorado
Mullin, Ida.....	Fort Collins, Colorado
Mundhenk, H. G.....	Denver, Colorado
Murray, Flora C.....	Fort Collins, Colorado
Muther, Robert W.....	Denver, Colorado
Norvell, Clyde W.....	Fort Collins, Colorado
Payne, Clinton B.....	Littleton, Colorado
Payne, Irving T.....	Littleton, Colorado
Pickett, Arthur H.....	Covington, Georgia
Riley, Roy S.....	Denver, Colorado
Stebbins, Florence	Shelton, Nebraska
Steen, Walter S.....	La Junta, Colorado
Stewart, Floyd E.....	Delta, Colorado
Thompson, Nora.....	Fort Collins, Colorado
Wade, Frank.....	Whitehall, Illinois

JUNIOR DOMESTIC NORMAL CLASS.

Harris, Mary B.....	Fort Collins, Colorado
Kendall, Alice P.....	La Junta, Colorado

Kerr, Rebecca	Denver, Colorado
Laughlin, Ethel M.....	La Salle, Colorado
McAnelly, Sadie.....	Fort Collins, Colorado
McGuire, Grace A.....	Oswego, Kansas
Warnecke, Mable.....	Harrison, Nebraska
Williams, Gertrude L.....	Boulder, Colorado

SENIOR DOMESTIC NORMAL CLASS.

Kimmons, Eva.....	Fort Collins, Colorado
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UNCLASSIFIED.

Albert, Anna B.....	Denver, Colorado
Appleman, Rella.....	Fort Collins, Colorado
Ashley, Marie B.....	Denver, Colorado
Balmer, Y. R.....	Fort Collins, Colorado
Barton, Willett	Leadville, Colorado
Chatfield, Laura.....	Fort Collins, Colorado
Culver, Alma.....	Athens, Illinois
Dewey, Lova C.....	Denver, Colorado
Dow, Herbert	Denver, Colorado
Edmonds, Jessie.....	Fort Collins, Colorado
Kerlee, Ozzie.....	Greeley, Colorado
Kingman, Harry.....	Boulder, Colorado
Language, A. K.....	Boulder, Colorado
Latimer, Jessie S.....	Fort Collins, Colorado
Luke, Amy	Fort Collins, Colorado
Malcarounne, Charles F.....	Fort Collins, Colorado
Marsh, Leland.....	Fort Collins, Colorado
Marvin, Bertha.....	Canon City, Colorado
Morgan, William J.....	Aledo, Illinois
Neff, Edward C.....	Greeley, Colorado
Neff, Grace A.....	Greeley, Colorado
Phillips, Jennie.....	Fort Collins, Colorado
Rist, Rodney.....	Fort Collins, Colorado
Ruthven, Belle.....	Loveland, Colorado
Scott, Mayme.....	Fort Collins, Colorado
Silcott, Lois.....	Fort Collins, Colorado
Southcote, Geoffrey B.....	Fort Collins, Colorado
Stults, Clinton L.....	Boulder, Colorado
Stuver, Florence M.....	Fort Collins, Colorado
Thomas, Flora.....	Fort Collins, Colorado
Trimble, Mollie.....	Fort Collins, Colorado

Utterback, Alta.....	Des Moines, Iowa
Walker, Maude.....	Fort Collins, Colorado
Webb, Francis.....	Longmont, Colorado
Woods, William C.....	Farmington, New Mexico

SPECIAL STUDENTS.

Eaton, Teresa (Commerce).....	Des Moines, Iowa
Olson, Olof G. (Agriculture).....	Rosebud, South Dakota
Olson, Mrs. Olof G. (Dairying).....	Rosebud, South Dakota
Quick, Anna (Latin).....	Fort Collins, Colorado
Quick, Susie (Latin).....	Fort Collins, Colorado
Skinner, Julia Faith (Greek).....	Fort Collins, Colorado
Wright, Ella (Commerce).....	Denver, Colorado

SUMMARY.

	Male.	Female.	Total.
Post Graduate.....	9	2	11
Senior	18	7	25
Irregular Junior.....	3	..	3
(No Junior class owing to change in course).			
Sophomore	20	2	22
Freshman	63	2	65
Senior Commercial.....	4	7	11
(Sophomore rank).			
Junior Commercial.....	15	14	29
(Freshman rank).			
Senior, Domestic Science Nor- mal	..	1	1
(Sophomore rank).			
Junior, Domestic Science Nor- mal	..	8	8
(Freshman rank).			
Second Sub-Freshman.....	70	13	83
First Sub-Freshman.....	103	29	132
Unclassified	14	21	35
Special	2	6	8
Total	321	112	433

GRADUATES

- Albert M. Ten Eyck, M.S., 1897 (B.Agr. University of Wisconsin, 1893), Agriculturist, State Agricultural College, ...Manhattan, Kansas
- Carl H. Potter, M.S., 1899 (B.S. University of Wisconsin, 1892), Assistant in Horticulture and Botany, Agricultural College of Colorado, 1899-1901, Horticulturist; deceased, 1902.
- James W. Lawrence, M.E., 1902, Professor of Mechanical Engineering, State Agricultural College...Fort Collins, Colorado

1884.

- George H. Glover, B.S. (M.S., 1902) (D.V.M., Iowa Agricultural College), Professor of Veterinary Science, Agricultural College of Colorado.....Fort Collins, Colorado
- Elizabeth Coy, B.S. (Mrs. James W. Lawrence).....Fort Collins, Colorado
- Leonidas Loomis, B.S., Stockman.....Fort Collins, Colorado

1885.

- Cora Bell Blinn, B.S.....Rocky Ford, Colorado
- Edna L. Hice, B.S.....Fort Collins, Colorado
- Lelia L. Loomis, B.S. (Mrs. T. H. Robertson).....Fort Collins, Colorado
- Grace Espy Patton, B.S. (M.S., 1897) (Mrs. W. H. Cowles), Journalist.....Denver, Colorado
- Robert E. Trimble, B.S., Assistant Meteorologist and Irrigation Engineer, Experiment Station, Agricultural College of Colorado.....Fort Collins, Colorado
- Helen White, B.S. (Mrs. John Rigden).....Timnath, Colorado

1886.

- Wilbert J. Sickman, B.S., Clerk of the District Court of Larimer County, Colorado, until 1896; deceased.

1887.

- Eleanor F. Gill, B.S. (Mrs. William Frazer).....Black Hawk, Colorado
- Marguerite E. Stratton, B.S., Librarian Agricultural College of Colorado, 1895-1901; deceased, 1901.

Lerah G. Stratton, B.S. (Mrs. P. J. McHugh).....
Fort Collins, Colorado
 Edwin G. Nettleton, B.S., Assistant Engineer Sonora and
 Sinaloa Canal, Mexico, 1893; deceased.

1888.

Lewis A. Coffin, B.S., Miner.....Carbon, Colorado
 Harvey H. Griffin, B.S., Agriculturist, Fort Collins Sugar
 Company.....Fort Collins, Colorado
 Josephine Lee, B.S., Principal Teacher, City Schools.....
Boulder, Colorado
 Jennie E. McLain, B.S. (Mrs. H. R. Corbett).....Chicago, Illinois

1889.

Lucy Bell, B.S., (Mrs. C. V. Benson).....Loveland, Colorado
 Arthur L. Davis, B.S. (M.D., 1895, Gross Medical College,
 Denver, Graduate Eye, Ear, Nose and Throat Medical
 College of Chicago, 1900); Physician.....Durango, Colorado

1890.

Clarence V. Benson, B. S. (LL.B., University of Michigan,
 1892; M. S., Agricultural College of Colorado, 1896);
 Cashier Bank of Loveland.....Loveland, Colorado
 Velma V. Benson, B.S., (Mrs. A. Beebe)..Fort Collins, Colorado
 Burt C. Buffum, B.S., (M.S., 1893), Professor of Agriculture
 and director of the Experiment Station, University of
 Wyoming Laramie, Wyoming
 Charles A. Duncan, B.S., Farmer.....Timnath, Colorado
 Newton C. Garbutt, B.S., Attorney-at-Law..Ft. Collins, Colorado
 Helen E. Lunn, B.S. (Mrs. T. J. Montgomery).....
Fort Collins, Colorado
 Harry R. Temple, B.S., Engineer, Boulder Flour Mill and Ele-
 vator Company Boulder, Colorado
 Cora B. Thoman, B.S., (Mrs. Clarence Jarbeau).....
Georgetown, Colorado
 Mary L. Weaver, B.S. (Ph.B., Ohio State University) Urban, Ohio

1891.

John S. Calkins, B.S., Farmer and Stockman....Harris, Colorado
 Charles R. Evans, B.S., Stockman and Fruit Grower.....
Fort Collins, Colorado
 Minnie E. McLain, B.S., Teacher.....Fort Lupton, Colorado

1892.

- Charles W. Beach, B.S., (B.S. University of Illinois, 1894),
Assistant Engineer, Great Plains Storage and Irrigation
Company.....Las Animas, Colorado
- Frank Beach, B.S., (M.S. 1896), Farmer and Stockman.....
.....Las Animas, Colorado
- Alice Bell, B.S., (Mrs. S. L. Boothroyd)....Fort Collins, Colorado
- Samuel Bell, B.S., (M.D., University of Denver, 1896), Physi-
cian Meeker, Colorado
- Don A. Carpenter, B.S., Southwestern Manager Sullivan Ma-
chinery Company El Paso, Texas
- Porter J. Preston, B.S., Deputy State Engineer. Denver, Colorado
- Albert J. Sedgwick, B.S., Journalist.....Toledo, Ohio
- Lewis L. Stimson, B.S., County Surveyor Weld County.....
.....Greeley, Colorado
- Frank H. Thompson, B.S., Assistant General Agent, Pacific
Mutual Life Insurance Company.....Denver, Colorado

1893.

- John D. Bloomfield, B.S., Cashier Citizens' State Bank.....
.....Nampa, Idaho
- Samuel L. Boothroyd, B.S., Instructor, Department of Physics
and Civil Engineering, Agricultural College of Colorado
.....Fort Collins, Colorado
- Ida M. Lewis, B.S., (Mrs. J. T. Douglas); deceased, 1894.
- Charles J. Gilkeson, B.S., Farmer and Shipper.....
.....Fort Collins, Colorado
- William J. Ralph, B.S., Deputy Postmaster. Fort Collins, Colorado
- Raymond F. Walter, B.S., Engineer of Greeley; Deputy State
Engineer Greeley, Colorado
- William W. Willard, B.S., Merchant.....Twin Lakes, Colorado

1894.

- Philo K. Blinn, B.S., Superintendent Arkansas Valley Sub-
Station Rocky Ford, Colorado
- Jacob H. Cowan, B.S., (B.Agr. Cornell University, 1899), Pro-
fessor of Botany and Horticulture, Agricultural College
of Colorado, 1900; deceased, 1900.
- Will H. Fairfield, B.S., (M.S., 1898), Experimentalist Canad-
ian-Northwestern Irrigation Company.....
.....Lethbridge, Alberta, Canada

- Minnie F. Harrington, B.S. (Mrs. W. F. Gilkison).....
Laramie, Wyoming
 Herbert S. Kendall, Merchant.....Denver, Colorado
 Celia May Southworth, B.S., (Mrs. Frank Beach).....
Las Animas, Colorado
 Harlan Thomas, B.S., Member State Board of Agriculture of
 Colorado; Architect. 511 McPhee Building, Denver, Colorado

1895.

- Jean B. Balcomb, B.S., Mining Engineer....Palo Alto, California
 Herbert A. Black, B.S., Manager Brooks Lumber Company..
Fort Collins, Colorado
 Edith G. Boothroyd, B.S., (Mrs. Ogilvy).....Arkins, Colorado
 Henry A. Calkins, B.S. (M.D., Denver College of Medicine,
 1901), Physician.....Denver, Colorado
 Edward P. Cooke, B.S., Money Clerk, United States and Pa-
 cific Express Companies Des Moines, Iowa
 Loren B. Curtis, B.S., Assistant Constructing Engineer for
 Denver Tramway Company.....Denver, Colorado
 William F. Gilkison, B.S., (M.E., 1898), Professor of Mechani-
 cal Engineering University of Wyoming..Laramie, Wyoming
 Ella G. Goldsborough, B.S., (Mrs. E. C. Reed).....
Fort Collins, Colorado
 Seth C. Lewis, B.S., Farmer.....Timnath, Colorado
 Edgar A. Mead, B.S., Farmer.....Greeley, Colorado
 George W. Nelson, B.S., Farmer and Stockman..Denver, Colorado
 Frances C. Schelt, B.S., (Mrs. Cunningham).....
Fort Collins, Colorado
 Walter K. Starbird, B.S., Stockman.....Ault, Colorado

1896.

- Fred Alford, B.S., Assistant Chemist, Agricultural College of
 Colorado Fort Collins, Colorado
 Henry F. Alps, B.S., Observer United States Weather Bureau
Lewiston, Idaho
 William E. Becker, B.S., Civil Engineer.....
Steamboat Springs, Colorado
 Florence J. Boothroyd, B.S., (Mrs. W. W. Hoagland).....
Omaha, Nebraska
 Alfred H. Bungardt, B.S., (M.D., 1900, University Medical Col-
 lege, Kansas City), Physician and Surgeon.....
Cordell, Oklahoma
 Allen P. Greenacre, B.S., Stockman.....Fort Collins, Colorado

- Robinson W. Hawley, B.S., Civil Engineer.....Robinson, Utah
 John E. Kiteley, B.S., Farmer.....Longmont, Colorado
 Richard A. Maxfield, B.S., Professor of Military Science and
 Tactics, Agricultural College of Colorado.....
Fort Collins, Colorado
 Abner S. McKee, B.S., Assayer.....
1727 Champa Street, Denver, Colorado
 Grafton S. Norman, B.S., Instructor in Mathematics and Agri-
 culturist, Agriculture and Mechanical College.....
Normal, Alabama
 Robert W. Sears, B.S., Stockman.....Fowler, Colorado

1897.

- May A. Dievendorf, B.S., (Mrs. Frank Miller).....
Fort Collins, Colorado
 Bertram A. Gage, B.S., Assistant Cashier, Fort Collins Na-
 tional Bank Fort Collins, Colorado
 Martha R. Gilkison, B.S., (Mrs. Frank Woods).....
Fort Collins, Colorado
 Robert S. Gray, B.S., Deputy Division Superintendent of Edu-
 cation Iligan, Philippine Islands
 Archie J. Harris, B.S., First Lieutenant Second United States
 Infantry Fort Logan, Colorado
 Ralph H. Hess, B.S., Secretary to the President and Manager
 of the Text-Book Department Agricultural College of
 Colorado Fort Collins, Colorado
 Alta E. Lewis, B.S., (Mrs. B. H. Bush).....Livermore, Colorado
 Smith D. Philip, B.S., Superintendent, Colorado Condensed
 Milk Company Fort Lupton, Colorado
 Anna L. Pickens, B.S., (Mrs. N. C. Warren); deceased 1901.
 Mary E. Prendergast, B.S., Graduate Student State Agricul-
 tural College Fort Collins, Colorado
 David J. Richards, B.S., Deputy Postmaster.....
Manila, Philippine Islands

1898.

- Emil Affolter, B.S., Farmer.....Longmont, Colorado
 Herman S. Brown, B. S., Maintenance of Way, D. & R. G. Ry.
 Company Salida, Colorado
 Raymond C. Calloway, B.S., Farmer.....Bellvue, Washington
 William A. Dickens, B.S., Farmer.....Longmont, Colorado

Jesse W. Goodwin, B.S., Machinist, U. P. Ry. Co.....
Cheyenne, Wyoming
 Fred S. Hotchkiss, B.S., Farmer and Engineer.....
Hotchkiss, Colorado
 Amos Jones, Civil and Irrigation Engineer.....Pueblo, Colorado
 Herbert C. Matthews, B.S., Machinist.....Monte Vista, Colorado
 Bernard J. Prendegast, B.S., Manager Brighton Water Works
 Brighton, Colorado
 Linnie M. Rutledge, B.S., deceased, 1900.
 Charles E. Swann, B.S., Assistant Engineer Union Pacific
 Coal Company.....Rock Springs, Wyoming
 Melvin D. Williams, B.S., United States Geological Survey..
 Ehrenburg, Arizona
 Thomas J. Warren, B.S., Warren Mercantile Company.....
 Fort Collins, Colorado

1899.

Lee R. Cooke, B.S., Machinist, Kilby Construction Company
 Fort Collins, Colorado
 Frank Corbin, B.S., Lumber Dealer.....Fort Collins, Colorado
 Howard E. Emigh, B.S., (M.E. 1901), Officer State Industrial
 School Golden, Colorado
 Raymond R. Fisk, B.S., ...Laramie, Wyoming
 Newton M. Fitch, B.S., Resident Engineer, Texas and Okla-
 homa Railroad Ada, Indian Territory
 Lewis C. Hall, B.S., City Engineer.....Canon City, Colorado
 William R. Headden, B.S., Instructor Rensselaer Institute..
Troy, New York
 Herman Howard, B.S., Machinist Southern Pacific Railroad..
 Wadsworth, Nevada
 Addison L. Kellogg, B.S., Bookkeeper, ...Denver, Colorado
 William J. Littleton, B.S., ...Trinidad, Colorado
 Charles W. Mayers, B.S., Contractor.....Littleton, Colorado
 Harry C. Miller, B.S., Pharmacist.....Silverton, Colorado
 Jacob C. Mulder, B.S., Provincial Supervisor, Province of
 Bohol Tagbilaran, Philippine Islands
 Charles S. Newell, B. S., Chief Inspector, Colorado Telephone
 Company Cripple Creek, Colorado
 Marguerite Prendergast, B.S., Instructor in Domestic Science,
 State Agricultural College.....Fort Collins, Colorado
 George A. Smith, B.S., Teacher, Monte Vista High School....
 Monte Vista, Colorado

James A. Stump, B.S., Law Student..... Ann Arbor, Michigan
 Edward S. G. Titus, B.S., (M.S., 1901), Investigator, Division
 of Entomology, Department of Agriculture,.....
 Washington, D. C.

1900.

Abbie C. Alford, B.S., (Mrs. R. A. Maxfield) Fort Collins, Colorado
 Laura Armstrong, B.S., (Mrs. E. S. G. Titus) .. Washington, D. C.
 Clifford S. Atherly, B.S., Letter Carrier.... Fort Collins, Colorado
 Clara M. Cunningham, B.S., Teacher..... Fort Collins, Colorado
 Thomas M. Donelson, B.S., Assistant Engineer, Mexican Cen-
 tral Railroad Agnas Calientes, Mexico
 Earl Douglass, B.S., Assistant Chemist, Agricultural Experi-
 ment Station of Colorado..... Fort Collins, Colorado
 Nellie M. Drake, B.S., (Mrs. Clyde Bartels), ... Pueblo, Colorado.
 Stuart B. Garbutt, B.S., Stock Clerk, Wright and Wilhelmy
 Company 2512 Chicago Street, Omaha, Nebraska
 Walter P. Hurley, B.S., Druggist..... Fort Collins, Colorado
 Adolph F. Lindon, B.S., Dairy and Stock Farmer.....
 Haxtum, Colorado
 Otto W. Lunnon, B.S., Electrician..... Fort Collins, Colorado
 Roy S. Lumry, B.S., Employe, Cheyenne Light, Fuel and
 Power Company Cheyenne, Wyoming
 William F. Marshall, B.S., deceased, 1903..... Scotland
 Ray E. McClave, B. S., Farmer and Stockman.....
 Platteville, Colorado
 Emmet C. McAnelly, B.S., County Surveyor Larimer County
 Fort Collins, Colorado
 Dana Q. McComb, B.S., Teacher, Civil Service Commission
 Manila, Philippine Islands
 Harry H. Murray, B.S., deceased, 1901,... Fort Collins, Colorado
 Elizabeth H. Nugent, B.S., (Mrs. Runyan) .. Fort Collins, Colorado
 Robert A. Pierce, B.S., Division Mine Engineer, Colorado
 Fuel and Iron Company..... Denver, Colorado
 Etta E. Richardson, B.S., Teacher..... Fort Collins, Colorado
 Ethel M. Smith, B.S..... Fort Collins, Colorado
 Edwin A. Sutton, B.S., Assistant Superintendent Colorado
 Fuel and Iron Company..... Denver, Colorado
 Pauline W. Taft, B.S..... Laporte, Colorado
 Oliver B. Tomlin, B.S., Letter Carrier..... Fort Collins, Colorado
 Frances M. Warren, B.S., (Mrs. C. J. Gilkison).....
 Fort Collins, Colorado

Anna M. Wood, B.S., Stenographer, Denver Post.....
 Denver, Colorado

1901.

James H. Andrews, B.S., Stockman.....Fort Collins, Colorado
 Rolland N. Bonnett, B.S., Farmer.....Fort Collins, Colorado
 Leroy A. Baker, B.S., Fellow Department of Mathematics, Ag-
 ricultural College of Colorado.....Fort Collins, Colorado
 Barton G. D. Bishop, B.S., Assistant, Department of Chem-
 istry and Geology Agricultural Experiment Station.....
 Fort Collins, Colorado
 Luther D. Cowan, B.S., Farmer.....Lasalle, Colorado
 Ralph W. Haynes, B.S., Farmer.....Fort Lupton, Colorado
 Ross D. Howard, B.S., Employe, Cambrian Iron Works.....
 Johnstown, Pennsylvania
 Royall S. Howlett, B.S., Teacher, Psychological Department,
 Colorado Fuel and Iron Company.....Rouse, Colorado
 Antoine Jacob, B.S., Assistant State Engineers' Office.....
 Denver, Colorado
 Cyrus E. McComb, B.S., Telephone Inspector, The Colorado
 Telephone Company Fort Collins, Colorado
 Ella A. Mead, B.S., (M.D., 1903, Denver and Gross Medical
 College), Interne County Hospital.....Denver, Colorado
 Thomas W. Metcalfe, B.S., Stockman.....Fort Collins, Colorado
 Bertha M. Newlon, B.S., (Mrs. Wells).....San Jose, California
 Richard R. Parks, B.S., Superintendent, J. R. Parks Mill
 Company Denver, Colorado
 Frank O. Rasmussen, B.S., Mechanical Engineer and Drafts-
 man, Colorado Fuel and Iron Company....Pueblo, Colorado
 Glynn B. Stannard, B.S., Assistant Engineer, Colorado Fuel
 and Iron Company.....Denver, Colorado
 Waltgen B. Smith, B.S., Chemist, Greeley Sugar Company....
 Greeley, Colorado
 Henry F. Sturdevant, B.S., Student.....Portland, Oregon
 Ned V. Tanner, B.S., Gauger, United Oil Company.....
 Florence, Colorado
 Richard W. Tanner, B.S., Student of Law....Florence, Colorado
 Oma M. Veazey, B. S.....Fort Collins, Colorado
 John Wilson, B.S., Bank Clerk.....Eaton, Colorado

1902.

- Lorna E. Annis, B.S.,.....Fort Collins, Colorado
 Fred C. Bishopp, B.S., Assistant Entomologist, Government
 Service Paris, Texas
 Addie S. Bristoll (Mrs. Frank Brown), B.S., Fort, Collins, Colorado
 Lewis E. Cattell, B.S., Surveyor.....Hopedale, Ohio
 Wilhelmine Douglass, B.S., Bookkeeper....Fort Collins, Colorado
 Howard J. Faulkner, B.S., Farmer and Stockman.....
 Fort Collins, Colorado
 Ernest N. Graves, B.S., Instructor Department of Mechanical
 Engineering, Agricultural College of Colorado.....
 Fort Collins, Colorado
 Nellie M. Killgore, B.S., Art Student.....Chicago, Illinois
 Oro McDermith, B.S., Assistant U. S. Geological Survey....
 Denver, Colorado
 Oliver P. Pennock, B.S., Engineer.....Bellvue, Colorado
 Robert E. Richardson, B.S., Assistant Department of Civil
 Engineering, State Agricultural College.....
 Ft. Collins, Colorado
 Olive L. Sheldon, B.S., Student National Park Seminary, For-
 est Glenn, Maryland.....Fort Collins, Colorado
 Harry True, B.S., Assistant State Engineer's Office.....
 Denver, Colorado
 Eleanor Tomlin, B.S.,..... Fort Collins, Colorado.
 Estes P. Taylor, B.S., Assistant Department of Entomology
 and Botany, State College of Kentucky..Lexington, Kentucky

1903.

- Helen Berry, B. S., Teacher.....Fort Collins, Colorado
 Frank N. Bills, B.S., deceased, 1904.....Denver, Colorado
 Wardwell Blydenburgh, B.S., Ranch Foreman.....
 Saratoga, Wyoming
 Donald L. Carver, B.S., Electrician..Steamboat Springs, Colorado
 Albert R. Cliff, B.S., Baggage Master, Colorado Road.....
 Fort Collins, Colorado
 Charles E. Davis, B.S., Deputy City Engineer.....
 Canon City, Colorado
 Susan F. Dotson, B.S., Teacher.....Ludlow, Colorado
 Marie Gill, B.S., Graduate Student Ohio University.....
 Columbus, Ohio
 Dwight, D. Gross, B.S., Draftsman, Denver Union Water Co.
 Denver, Colorado

Bernard H. Hensel, B.S., Machinist.....Denver, Colorado
 Robert P. Jackson, B.S., State Engineer's Office.....
 Denver, Colorado
 William A. Lamb, B. S., Geological Survey....Meeker, Colorado
 Fred N. Langridge, B.S., Fellow in Mechanical Engineering,
 State Agricultural College Fort Collins, Colorado
 John H. Lewis, B.S., Farmer.....Timnath, Colorado
 Ray C. Murphy, B.S., Surveyor, ...Glenwood Springs, Colorado
 James D. Norvell, B.S., Apiarist.....Fort Collins, Colorado
 John A. Phillips, B.S., Surveyor.....Fort Collins, Colorado
 Joseph F. Reed, B.S., Assistant Agronomist, Department of
 Agriculture Washington, D. C.
 Fred Stearley, B.S., Inspector, Colorado Telephone Company,
 Fort Collins, Colorado
 Florence Tharp, B.S., Fellow, Department of Domestic Sci-
 ence, State Agricultural College.....Fort Collins, Colorado
 Irwin W. Veazey, B.S., Clerk.....Fort Collins, Colorado

COMMERCIAL COURSE.

1898.

Charles L. Arnell, Locomotive Fireman.....Alamosa, Colorado
 Ray J. Baker, Merchant.....Wellington, Colorado
 William A. Doty, Bookkeeper and Stenographer, Denver City
 Tramway Company.....Mendota Block, Denver, Colorado
 Frank L. Garnick, Mechanic.....Fort Collins, Colorado
 Richard E. Hammond, Salesman, American Radiator Com-
 pany Denver, Colorado
 Agnes L. Hawley, Stenographer, Centennial Oil Company..
 Pueblo, Colorado
 Pearl Hays, Instructor in Stenography and Typewriting
 Kentucky Female Orphan School.....Midway, Kentucky
 Julius P. Olson, Manager, Gypsum Branch W. J. Riley Mer-
 cantile Company Gypsum, Colorado
 Inez Smith, Stenographer.....Denver, Colorado
 Bessie C. Wood (Mrs. Smith) ..2517 Clay Street, Denver, Colorado

1899.

Byron K. Baird, United States Revenue Service.....
 Honolulu, Hawaii
 Charles J. Gilkison, B.S., Farmer and Shipper.....
 Fort Collins, Colorado

William R. Headden, B.S., Assistant Instructor Rensselaer
Polytechnic Institute Troy, New York
George F. Kern, Agriculturist New Windsor, Colorado
Lizzie M. Nicholson (Mrs. Hershey) Denver, Colorado
Cecil G. Philip, Lumber Merchant Fort Lupton, Colorado

1900.

Eunice Chatfield, Stenographer, J. M. Kellin and Company..
..... Pueblo, Colorado
Mary A. Dickerson, Stenographer and Bookkeeper
..... Denver, Colorado
James Elliott, Farmer Timnath, Colorado
L. Cale Estes, Student Fort Collins, Colorado
Mary E. Quick, Stenographer Fort Collins, Colorado
Edith Schang (Mrs. F. C. Wilkes) Fort Collins, Colorado
Emmet O. Smith, Merchant Merino, Colorado
Pearl Smith (Mrs. Brooks) 416 Fillmore Street, Denver, Colorado
Marion E. Warren, Instructor in Bookkeeping and Stenog-
raphy, University of Wyoming, 1900-1901; deceased, 1901.

1901.

Cora M. Anderson, Bookkeeper and Stenographer
..... Fort Collins, Colorado
Robert A. Brown, Bookkeeper and Stenographer, Denver Sav-
ings Bank Denver, Colorado
Dudley G. Dwyre, Stenographer, United States Civil Service,
..... Manila, Philippine Islands
Spencer Farmer, Merchant Fort Collins, Colorado
Edwin W. Smith, Principal Commercial Department, North
Denver High School Denver, Colorado
Henry P. Roberts, Bookkeeper and Stenographer
..... Denver, Colorado
Jennie M. Welch, Stenographer, Laramie Light and Power
Company Fort Collins, Colorado

1902.

Albert E. Bayliss, Accountant and Stenographer Mesa County
State Bank Grand Junction, Colorado
Annie C. Beach (Mrs. Prickett) Fort Collins, Colorado
Maud E. Benson, Stenographer and Bookkeeper
..... Fort Worth, Texas
Clara Barry, Stenographer Fort Collins, Colorado

Horace M. Cattell, Stenographer and Bookkeeper....Adena, Ohio
 Emma L. Case, Stenographer.....Laramie, Wyoming
 Lena M. Gilkinson (Mrs. Chas. R. Jones)..Fort Collins, Colorado
 George Richardson, Bookkeeper and Stenographer, W. J.

Riley Mercantile Co.....Gypsum, Colorado
 Florence M. Roller, Stenographer, First National Bank.....

.....Fort Collins, Colorado
 Delano F. Scott, Bookkeeper and Stenographer.....

.....Fort Collins, Colorado
 Charles H. Sisson, Stenographer, W. J. Riley Mercantile Com-

pany Eagle, Colorado
 Irwin Sisson, Stenographer, Law Student.... Washington, D. C.

George F. Schattinger, Law Stenographer....Telluride, Colorado
 Claude J. Wilson, Bookkeeping, J. W. Hughes & Company..

.....Meeker, Colorado

1903.

Julia A. Crary, Bookkeeper and Stenographer.....

.....Fort Collins, Colorado
 Morris Fliniau, Stenographer, New York Life Insurance Co.,

.....Pueblo, Colorado
 Noble D. Lane, Graduate Student, Commercial Department

Agricultural College.....Fort Collins, Colorado
 Mary E. Metcalfe, Stenographer.....Fort Collins, Colorado

Ada Showers, Stenographer.....Kearney, Nebraska
 Harry C. Strong, Bookkeeper and Stenographer.....

.....Denver, Colorado
 Howard Tubbs, Stenographer and Clerk...Kansas City, Missouri

Mellie Wagy, Bookkeeper and Stenographer.....

.....Wellington, Colorado
 Roy Zobel, Merchant.....Leadville, Colorado

Nora Zenor, Stenographer.....Fort Collins, Colorado

CALENDAR OF EXERCISES

1904-1905.

Entrance Examinations.....	Friday and Saturday, Sept. 2-3, 1904
Registration of Students....	Monday and Tuesday, Sept. 5-6, 1904
Fall Term Begins.....	Wednesday, September 7, 1904
Fall Term Closes.....	Friday, November 25, 1904
Winter Term Begins.....	Monday, November 28, 1904
Holiday Recess Begins.....	Thursday, December 22, 1904
Holiday Recess Closes.....	Tuesday, January 4, 1905
Winter Term Closes.....	Friday, March 10, 1905
Spring Term Begins.....	Monday, March 13, 1905
Sermon Before Christian Associations.....	
.....	3 p. m. Sunday, June 4, 1905
Baccalaureate Sermon.....	8 p. m. Sunday, June 4, 1905
Commencement Exercises of Literary Societies.....	
.....	8 p. m. Monday, June 5, 1905
Junior Class Day Exercises.....	8 p. m. Tuesday, June 6, 1905
State Board of Agriculture Meets.....	Wednesday, June 7, 1905
Senior Class Exercises.....	10 a. m. Wednesday, June 7, 1905
Alumni Debate.....	8 p. m. Wednesday, June 7, 1905
Commencement Exercises.....	Thursday, June 8, 1905
Reunion of Alumni.....	8 p. m. Thursday, June 8, 1905

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The State Agricultural ..College..

FORT COLLINS,
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Catalogue and Prospectus—1905-06

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December 4th.**

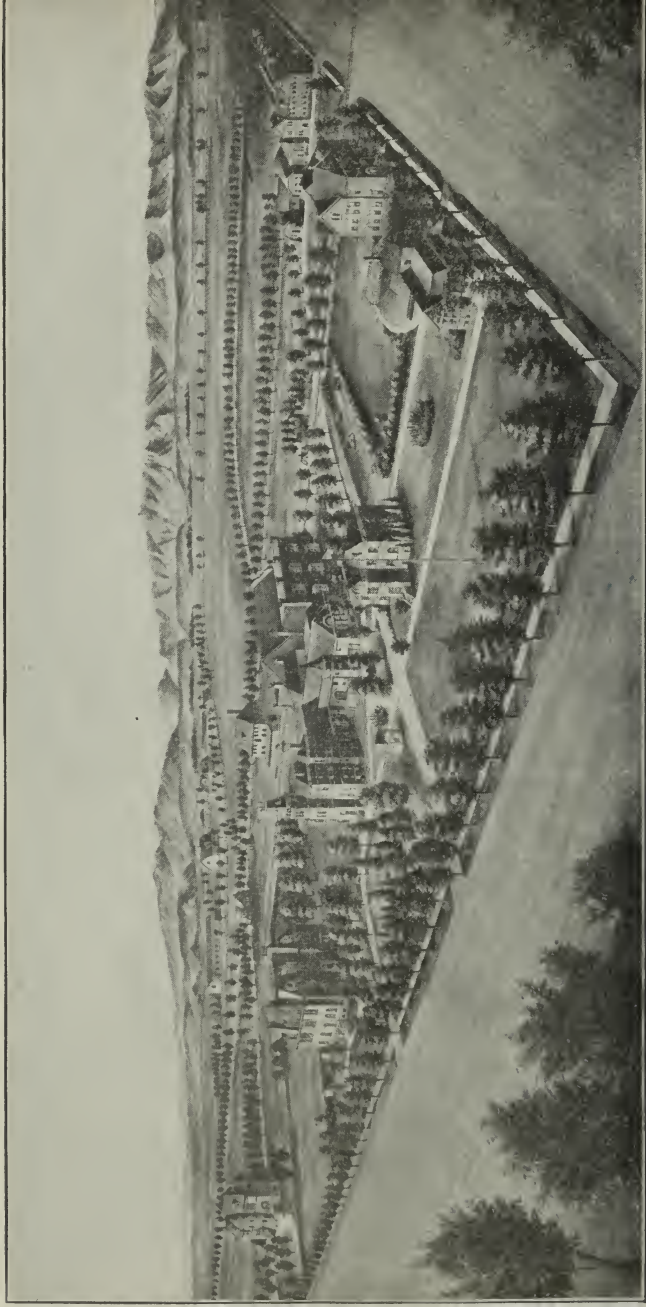


**Farmers' Course, (2 weeks) January 6
Each Year.**



Commencement Day, June 7, 1906

THE
JOHN CRBRAR
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Birdseye View of the College Grounds and Buildings.

Twenty-Sixth Annual Register of the
Officers and Students

of the

COLORADO STATE COLLEGE

of

Agriculture and the
Mechanic Arts

for 1904-05

Prospectus for 1905-06



FORT COLLINS, COLORADO

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THE STATE BOARD OF AGRICULTURE.

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Professor of Mechanical Engineering.

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Professor of Civil and Irrigation Engineering.

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Professor Military Science and Tactics.

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Librarian.

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INSTRUCTORS AND ASSISTANTS.

GAVIN N. HOUSTON, C. E.,
Civil and Irrigation Engineering.

RALPH PARSHALL, B. S.,
Civil and Irrigation Engineering.

ROBERT E. TRIMBLE, B. S.,
Meteorology and Irrigation Engineering.

JOHN E. BONEBRIGHT, M. A.,
Physics.

EMERY D. SEARING, B. S.,
Mechanical Engineering.

FRANK O. RASMUSSEN, B. S., ..
Mechanical Engineering.

ARTHUR M. GARBUTT, B. S.,
Architecture.

WILLIAM ELZINGA,
Forge and Foundry Practice.

HIRAM PIERCE,
Carpentry.

FRED C. ALFORD, M. S.,
Chemistry.

EARL DOUGLASS, M. S.,
Chemistry.

LATHROP M. TAYLOR, B. S.,
Phonography and Typewriting.

CHARLES GOLDING-DWYRE, JR., B. Acct.,
Bookkeeping.

S. L. MACDONALD, B. Ped.,
Mathematics.

LEROY A. BAKER, M. S.,
Mathematics.

ELIZABETH F. RYAN,
Domestic Science.

MARGARET PRENDERGAST, B. S.,
Sewing and Millinery.

LOTTA I. CRAWFORD, B. S.,
Domestic Science.

INSTRUCTORS AND ASSISTANTS.

(CONTINUED.)

EDWARD L. SPAULDING, B. E.,
Oratory.

JOHN H. McINTOSH, A. B., B. L.,
Physical Director.

S. ARTHUR JOHNSON, M. S.,
Entomology.

L. C. BRAGG,
Curator of Museum.

ISAAC E. NEWSOM, B. S.,
Veterinary Science.

WILLIAM J. MORGAN,
Veterinary Science.

BURTON O. LONGYEAR, B. S.,
Botany and Forestry.

HENRY H. ORTH,
Horticulture and Landscape Gardening.

ANDREW H. DANIELSON, B. S.,
Agronomy.

WILLIAM O'BRIEN,
Farm Superintendent.

RALPH H. HESS, M. S.,
Secretary to the President.

ANNA B. ALBERT, A. B.,
Assistant Librarian.

ARTHUR MILLIGAN,
Stenographer, Agricultural Department.

MARGARET MURRAY,
Stenographer, Director's Office.

KATHERINE MURRAY,
Stenographer, Secretary's Office.

MARGARET NORVELL,
Stenographer.

FLORA THOMAS,
Stenographer.

FELLOW==First Year.

FLORENCE THARP, B. S., (1902)

Domestic Science.

SPECIAL LECTURERS IN VETERINARY SCIENCE.

- ROBERT M. McCARROLL, V. S., "Principles of Surgery,"**
.....**Fort Collins, Colo.**
- FRED W. CULVER, V. S., "Disease and Treatment"....**
.....**Longmont, Colo.**

FIELD AGENT.

PHILO K. BLINN, B. S.,
Rocky Ford Station.

STATION STAFF.

LOUIS G. CARPENTER, M. S., Director..	Irrigation Engineering
WILLIAM L. CARLYLE, B. S. A.....	Agriculture
CLARENCE P. GILLETTE, M. S.....	Entomology
W. H. OLIN, M. S.....	Agronomy
C. J. GRIFFITH, B. S. A.....	Animal Husbandry
GEO. H. GLOVER, M. S., D. V. S.....	Veterinary Science
WILLIAM P. HEADDEN, A. M., Ph. D.....	Chemistry
WENDELL PADDOCK, M. S.....	Horticulture
ROBERT E. TRIMBLE, B. S.....	
.....	Assistant in Irrigation Engineering
ANDREW H. DANIELSON, B. S.....	Assistant in Agriculture
B. O. LONGYEAR, B. S.....	Assistant in Horticulture
EARL DOUGLASS, M. S.....	Assistant in Chemistry
S. ARTHUR JOHNSON, M. S.....	Assistant in Entomology
PHILO K. BLINN, B. S.....	
.....	Field Agent, Arkansas Valley, Rocky Ford

OFFICERS.

BARTON O. AYLESWORTH, A. M., LL. D.,	PRESIDENT.
LOUIS G. CARPENTER, M. S.....	Director
ALFRED M. HAWLEY.....	Secretary
MARGARET MURRAY.....	Stenographer and Clerk

REQUIREMENTS FOR ADMISSION.

(1) **First Sub-Freshman Year.**—Students presenting eighth grade diplomas or certificates of standard excellence may be admitted without formal examinations, except such as come from towns having accredited high schools. The latter must pass an examination in arithmetic, grammar, reading, spelling, penmanship, and United States history.

Admission to any year may be made upon passing required examinations.

(2) **Second Sub-Freshman Year.**—Those having finished the accredited high school ninth and tenth grades in a satisfactory manner will be admitted to the Second Sub-Freshman year without examination.

(3) **Freshman Year.**—Students are admitted to the Freshman year after thorough examinations taken in the subjects contained in the first and second Sub-Freshman years, or upon the presentation of certificates of graduation from accredited high schools. Certificates from schools not accredited may be considered in arranging for entrance examinations. The following schools are accredited:

Aspen High School.

Boulder High School.

Canon City High School.

Central City High School.

Cheyenne, Wyoming, High School.

Colorado Springs High School.

Cripple Creek High School.

Delta High School.

Denver High School, District No. 1.

Denver High School, District No. 2.

Denver Manual Training High School.

Douglass County High School (Castle Rock).

Durango High School.

Eaton High School.

Florence High School.

Fort Collins High School.
Fort Morgan High School.
Georgetown High School.
Golden High School.
Grand Junction High School.
Greeley High School.
Gunnison County High School.
Idaho Springs High School.
Lamar High School.
Las Animas High School.
Leadville High School.
Logan County High School (Sterling).
Longmont High School.
Loveland High School.
Manitou High School
Mont Clair High School.
Monte Vista High School.
Montrose County High School (Montrose).
North Denver High School.
Pueblo High School, District No. 1.
Pueblo High School, District No. 20.
Rocky Ford High School.
Saguache County High School (Saguache).
Salida High School.
South Canon High School (Canon City).
South Denver High School.
Trinidad High School.
Telluride High School.
Union High School, No. 1 (La Junta).
Victor High School.
Wheat Ridge High School (Alcott).

Candidates for advanced classes or work will be admitted by examination, or certified standing from schools having an equivalent grade of work, or both.

Applicants appearing late in the College year will be required to pass, in addition to the entrance examination, a further examination in the work already passed over by the class they desire to enter.

Two Years Courses.—The Commercial Course and the Nor-

mal Domestic Science Course (two years each) have same rank as Freshman and Sophomore years.

(4) **Short Course in Agriculture.**—Term opens December first and closes March first of each year. Each term consists of two divisions of six weeks each.

Applicants must be, at least, seventeen years of age and capable of passing an examination in reading, spelling and penmanship.

(5) **Two Years Short Course in Domestic Science.**—Requirements for admission and length of term same as No. 4. as No. 4.

(6) **Farmers' Short Course.**—Two weeks each year in January. Open to all who desire to enter.

LOCATION AND HISTORY.

Location.—The State Agricultural College is located at Fort Collins, Colorado, the county seat of Larimer County, which is one of the most prosperous agricultural counties in the State. Northern Colorado is probably one of the most remarkable farming districts in the world, famous for its sugar beets, alfalfa, potatoes and lamb feeding. Fort Collins contains 7,000 inhabitants, and is beautifully situated, about five miles from the foothills, and in full view of Long's Peak and many miles of the Snowy Range. Its supply of water is derived from the melting snows of the mountains; its buildings have electric light, and its sidewalks are exclusively made of flagstone, which is found in large quarries almost at its doors.

The College is at the south side of the town; on either side of the Colorado and Southern Railway are its buildings and the farm. Visitors are always welcome. They find the town accessible by six trains, which arrive daily from Denver and other points. With the advantages of pure water, a beautiful location, electric lights and steam heat, not much is left to be desired. All the surroundings of the College are favorable to the carrying on of the work which it is its mission to perform.

History.—The origin of The State Agricultural College of Colorado, like that of its sister institutions in other states, dates back to an act of Congress, passed July 2, 1862. Therein it is proposed to endow in the several States and Territories, by grants of public lands, "a college where the leading object shall be, without excluding other scientific and classical studies, and including Military Tactics, to teach such branches of learning as are related to agriculture, and the mechanic arts in such manner as the Legislature of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

This act gave the College an endowment of 90,000 acres of land.

The Constitution of Colorado gives the College an independ-

ent existence and a permanent home in Fort Collins. Three citizens of the town donated to the State two hundred and forty acres of land whereon to erect the necessary buildings. In 1877, the Legislature provided for the support of the College by levying a tax of one-tenth of a mill on all the taxable property of the State. At this time "The State Board of Agriculture" was created, and all matters pertaining to the management of the College were placed under its control. The one-tenth mill levy was increased, in 1879, to one-fifth of a mill. The corner-stone of the Main College Building was laid July 29, 1878. This building was completed and ready for occupancy early in the following year.

Recently, some 600 acres of grazing land, four miles west of the College farm, have been purchased, also nearly 100 acres of the richest land in Colorado situated a half mile east of the College have been contracted for. This affords an excellent experimental tract.

The initial term of the College opened September 1, 1879. The record shows the enrollment of twenty different students at the close of this term. There was but one course of study. The college year began with the spring term and closed with the autumn term, the vacation season occurring in mid-winter. The calendar for 1881-1882 shows the abandonment of this arrangement and the adoption of the present plan of three consecutive terms of thirteen weeks each, with a short vacation at Christmas season and a long vacation extending from "Commencement Day," early in June, to the first Monday in September.

Elective studies are first noted in the catalogue for 1886-'87. The next year brings the announcement for the differentiation of the work at the close of the Sophomore year. Two courses, the Agricultural and the Mechanical, are outlined. The irrigation Engineering Course and the Ladies' Course were first scheduled in the catalogue for 1899-'90. The Commercial Course, to be completed in two years, was introduced in 1896.

The College now comprises the following-named departments: Agriculture, Horticulture and Botany, Animal Husbandry, Short Course in Agriculture (Farmers' Course), Chemistry and Geology, Zoology and Entomology, Mechanical Engineering, Civil and Irrigation Engineering, Electrical Engineering, Mathematics, Constitutional History and Irrigation

Law, Logic and Political Economy, History and Literature, Rhetoric and Philosophy, Architecture, Domestic Science, Veterinary Science, Modern Languages, Commercial Course, Military Science, and the Experiment Station.

Provision is made for instruction in Music, Oratory, and Physical Culture.

The work of the College is carried on in strict conformity with a section of the General Laws of the State, which reads as follows:

"The design of the institution is to afford thorough instruction in agriculture and the natural sciences connected therewith. To effect that object most completely, the institution shall combine physical with intellectual education, and shall be a high seminary of learning, in which the graduates of the common schools, of both sexes, can commence, pursue, and finish a course, terminating in thorough theoretical and practical instruction in those Sciences and Arts which bear directly upon agriculture and kindred industrial pursuits."

During the last few years the work in horticulture, agronomy and animal husbandry has been greatly enriched. The authorities realize the immense possibilities of agriculture in Colorado. They also realize that the problems of agriculture in the Rocky mountain region are varied as the many soil conditions and have been solved only in part.

It is the purpose of the institution to bring the results of experiments immediately to the farmer by means of bulletins and farmers' institutes. A state organizer will be placed in the field at once.

THE AGRICULTURAL EXPERIMENT STATION.

The Agricultural Experiment Station is a department of the College in accordance with the Act of Congress of 1888, commonly known as the Hatch Act. The station is supported by an annual Congressional appropriation of \$15,000. This is available for conducting investigations and experiments, and in disseminating the results of such investigations. It is also aided in various ways by the State Board of Agriculture.

The investigations of the station are made principally at the main station at Fort Collins, where the equipment is located; but in case the necessities of an investigation or the urgent needs of any part of the State are helped by entering on observations elsewhere, this is done so far as the time and means permit. With the large area of Colorado and the diversity of conditions a great variety of questions arise for solution. The necessities of our conditions confine us to the more important, using the results of other stations where applicable to our conditions. The situation in our State and the peculiarities of our agriculture indicate that the principal efforts should be along the lines related to irrigated agriculture. The station has for years given attention to the growth of sugar beets in all parts of the State and in conjunction with the Department of Agriculture at Washington has distributed seeds and made analyses which have given the knowledge for the establishment of factories; has carried on co-operative experiments, with the aid of many, on irrigation questions, as on the duty of water and the determination of seepage from hundreds of miles of streams and ditches; co-operated in the investigation of fruit pests and plant diseases, etc. The director acts as special agent of the United States Department of Agriculture in the sugar beet and sorghum investigations, and another member of the staff acts as special agent in co-operative grass and sugar beet seed investigations. Under a recent act of Congress all seeds of grass and forage plants are distributed through the Experiment Station instead of through Congressmen or the Department of Agriculture. At the present time much attention is being given to Animal Husbandry.

There are two field stations, one near Rocky Ford and one at Cheyenne Wells on the Great Plains. Each of these is a portion of the main station, with a superintendent in charge, carrying on the investigations outlined or approved by the director and adopted by the State Board of Agriculture.

The publications of the station are sent without charge to those desiring them. They are of four classes:

1. **Bulletins.**—Over one hundred have been published on various topics of agricultural interests. These are distributed, so far as the editions permit, to those interested in Colorado agriculture. There are bulletins on irrigation matters, alfalfa, sugar beets, barley and other field crops, cattle and sheep feeding, strawberries, small fruits and other garden crops, insects, etc. Lists of those printed can be supplied. The bulletins are sent regularly to those whose names are on the mailing list.

2. **Annual Reports.**—These are largely administrative and technical. They are not prepared for general distribution, and hence issued in smaller editions. The last is the Seventeenth Annual Report.

3. **Press Bulletins.**—Shorter statements of experiments in various lines, or information needing immediate distribution. Sent to papers and to individuals, according to subject matter. Issued as the need arises.

4. **River Press Bulletins.**—These are weekly reports issued during the irrigation season, rendering information on the current water supply of the Cache la Poudre River, obtained in pursuance of other investigations, available to the public. Issued in small numbers. Sent to the newspapers of Northern Colorado and to interested individuals.

Many bulletins are out of print. Copies are desired to complete sets for libraries.

For Station publications or general correspondence, address: The director of the Experiment Station, Fort Collins, Colorado.

The following Bulletins may be had on application:

No.	Title.	Author.
33.	Seepage, or Return Waters from Irrigation.	L. G. Carpenter
35.	Alfalfa.....	William P. Headden
36.	Sugar Beets.....	W. W. Cooke, William P. Headden
38.	Sheep Scab; A Few Insect Enemies of the Orchard...	
	.....	C. P. Gillette

39. A Study of Alfalfa and Some Other Hays.....William P. Headden
55. Forests and Snow.....L. G. Carpenter
57. Farm Notes (Alfalfa, Corn, Potatoes and Sugar Beets)
.....W. W. Cooke
63. Sugar Beets, A Resume of Work Done by Colorado
Agricultural Experiment Station.....W. P. Headden
64. Press Bulletins Nos. 1 to 11, inclusive.
65. Soil Study, Part III, The Soil.....W. P. Headden
66. Relation of Bovine to Human Tuberculosis, Tuberculin
Tests of College Herd...G. H. Glover and B. C. Buffum
67. Distribution of Water, Powers and Duties of Colorado
Officials.....H. N. Haynes
68. Pasture Grasses. Leguminous Crops. Cantaloupe
Blight H. H. Griffin
69. Plant Diseases of 1901.....Wendell Paddock
71. Insects and Insecticides.....C. P. Gillette
73. Feeding Value of Beet Pulp. Part II. Beet Pulp and
Sugar Beets for Cows....B. C. Buffum and C. J. Griffith
74. Swine Feeding. Beet Pulp and Sugar Beets. Home
Grown Grains vs. Corn. Other Trials.....
.....B. C. Buffum and C. J. Griffith
75. Lamb Feeding Experiments. Sugar Beets and Beet
Pulp. Grain and Corn. Other Trials.....
.....B. C. Buffum and C. J. Griffith
76. Feeding Beet Pulp to Lambs.....H. H. Griffin
77. Unirrigated Lands in Eastern Colorado.....J. E. Payne
78. The Tomato Industry of the Arkansas Valley..H. H. Griffin
79. Treatment of Stinking Smut in Wheat.....Joseph Reed
80. Laying Down Peach Trees.....W. Paddock
81. Onion Growing in the Poudre Valley.....W. Paddock
82. Colorado Irrigation Waters and Their Changes.....
.....W. P. Headden
83. Irrigation Waters and Their Effects.....W. P. Headden
84. An Apricot Blight.....Wendell Paddock
85. Cantaloupe Seed.....P. K. Blinn
86. Crown Gall.....Wendell Paddock
87. Cattle Raising on the Plains.....J. E. Payne
88. Dairying on the Plains.....J. E. Payne
89. Wheat Raising on the Plains.....J. E. Payne

90. Unirrigated Alfalfa on Upland.....J. E. Payne
91. Potato Failures. A Second Report.....F. M. Rolfs
92. Large Potato Vines and No Potatoes.....W. Paddock
93. Colorado Hays and Fodders.....W. P. Headden
94. Report of the Entomologist.....C. P. Gillette
95. Early Cantaloupes.....P. K. Blinn
96. The Shade Trees of Denver.....
.....W. Paddock and B. O. Longyear
97. Feeding Steers on Sugar Beet Pulp, Alfalfa Hay and
Farm Grains
.....W. L. Carlyle, C. J. Griffith and A. J. Meyer
98. Beet Worms and Their Remedies.....
.....C. P. Gillette and S. A. Johnson
99. How Can We Maintain the Fertility of Our Colorado
Soils?.....W. P. Headden
100. Flora of Colorado.....P. A. Rydberg
101. The Western Cricket.....C. P. Gillette and S. A. Johnson

PRESS BULLETINS.

The following are still available:

- | No. | Title. | Author. |
|-----|---|---------------------------|
| 4. | The Beet Army Worm..... | C. P. Gillette |
| 6. | A So-Called Blight Cure..... | C. H. Potter |
| 7. | The Seepage Measurements of the Experiment Station
..... | L. G. Carpenter |
| 8. | Potato Failures (1900)..... | W. Paddock |
| 9. | Sunshine for 1900..... | L. G. Carpenter |
| 10. | Sugar Beets, Summary from Bulletin 63..... | W. P. Headden |
| 11. | How to Fight the Codling Moth..... | C. P. Gillette |
| 13. | The Best Time to Cut Alfalfa..... | Wm. P. Headden |
| 14. | Return Waters of Boulder Creeks..... | L. G. Carpenter |
| 15. | Return Waters of the Uncompahgre..... | L. G. Carpenter |
| 16. | The Prairie Dog as the Range Pest..... | J. E. Payne |
| 17. | Trials of Macaroni Wheat..... | J. E. Payne |
| 18. | Crops for Unirrigated Lands..... | J. E. Payne |
| 19. | Grasshoppers; Their Habits and Remedies.... | C. P. Gillette |
| 20. | Plant Lice and Their Remedies..... | S. Arthur Johnson |
| 21. | Spraying for Plant Lice and the Codling Moth.....
..... | C. P. Gillette |
| 23. | Fall Handling of Potatoes to Lessen Injuries From In-
sects and Fungi..... | S. A. Johnson, W. Paddock |

BUILDINGS AND EQUIPMENT.

Main College Building.—College Hall, with its new addition, contains large recitation rooms for the following-named departments: Mathematics; English and Philosophy; History and Literature; German, Spanish and French; Political Economy and Logic; Constitutional History and Irrigation Law; and Zoology and Entomology. This building also contains the Museum and Zoological Laboratory; offices for College officers; rooms for The State Board of Agriculture and the Faculty; and a large, well-arranged Assembly Room, with opera chairs for seating 900 persons, and stage, retiring rooms, cloak room attached. This building is heated by steam and has electric lighting throughout. The basement contains an Armory 40x72 feet, for drill, and an adequate Gymnasium; office of The Rocky Mountain Collegian; special work rooms and laboratories; bath rooms; and rooms for janitor, storage, etc.

Chemical Laboratory.—This building is designed after the French Renaissance style of architecture, with the individual grace and picturesque effect of the old French chateaux. It appears in pleasing contrast with the Romanesque structures in the midst of which it is erected. It is constructed of red sandstone rubbed and smoothed. In the interior arrangement, convenience and facility for carrying on efficient chemical analysis are kept in mind.

To the left of the main loggia, on the first floor, is the professors' suite of rooms, including office, balance room and private laboratory—the latter being provided with hoods and direct communication with a storage room in the basement.

To the right the stairway leads to an entrance to the second floor. Directly in front of the main entrance is the qualitative laboratory, 30x38 feet, supplied with working desks large enough to accommodate thirty-two students. The room is provided with nine hoods, storage room and balance room. This room, being an inside room, is lighted by a large sky-light in the roof—a superior system of lighting when the work to be done is considered.

To the left of this laboratory and behind the professors' rooms is the quantitative laboratory, arranged to accommodate twelve students. It is furnished with six laboratory desks, two hoods and a balance room.

All laboratory desks throughout the building are made of quarter-sawed oak tops and butternut sides, drawers, etc. The sinks are placed at the sides of the laboratories. Each desk is provided with gas and water supplies; also a two-inch waste, flush with the top of the desk; this waste takes the place of sinks in the desk and eliminates much uncleanness usually connected with the work. The hoods are furnished with gas and water supplies; also with strong draft, accelerated by steam coils placed in the large vent stacks.

The second floor of the building is arranged into two lecture rooms, each about 26x46 feet. The chemistry lecture room is connected with the apparatus room by a large hood, provided with slides on both sides, making the transfer of apparatus rapid and convenient. There is connection, also, with the museum and chemical cabinet. The geology lecture room is connected with microscopical room and the museum. The basement is used principally for storage and heating purposes, gas generation and some analytical work.

The Experiment Station occupies the western section of the first floor. It consists of a room for the assistants, a large work room, store room, balance room and a small room for nitrogen determinations.

Horticultural Hall.—The Horticultural Hall is located on the north side of the campus, facing Laurel Street, and is used by the Department of Botany, Horticulture and Forestry. It is one of the most thoroughly constructed and artistically designed buildings on the grounds. The ground plan is 52x64 feet. It is basement, two stories, and attic in height. The basement, which is composed of Pleasant Valley red sandstone, stands high above grade line and gives excellent rooms for grafting, experimental work and the storing of implements. The first story of the building has a ceiling height of fourteen feet and is planned to contain one large lecture room, office, assistant's office, herbarium and other small rooms for experimental work. The second floor is arranged for a large museum with octagon ceiling; also private laboratories, as well as plant, seed and apparatus rooms. The at-

tic is floored and used for storage of plants and seeds. The superstructure of the building is composed of Boulder pressed brick, trimmed with Pleasant Valley red sandstone rubbed to a smooth finish and set flush with the brick work. The general character of the building is after the Romanesque style of architecture, the details, including the moulding and carving, being carried out after the Renaissance. This gives the building a character of solidity, yet with sufficient grace of outline and trimming to relieve the too massive appearance generally characteristic of Renaissance design. The building is specially designed to characterize the work of this Department, there being incorporated in the carving and details designs emblematic of the purpose of the building. The roof is heavily trussed and covered with slate. The building is heated thoroughly by the best improved system of hot water. The rooms are thoroughly ventilated by modern means, and much care has been taken to obtain a thorough sanitary system of plumbing and sewerage. The trimmings throughout are of butternut, finished in the natural wood. The hardware is of solid bronze.

Greenhouses and Forcinghouses.—The new greenhouse recently completed is one wing of a plan which contemplates the addition, at some future time, of a palm-house, and a second wing similar to the one built. Its construction is such that the other parts can be added at any time.

The structure is 25x50 feet and consists of a wrought iron frame securely bolted to cast sills which cap, and are supported by, brick walls rising from a stone foundation. The frame carries the heating pipes and also the shafting from the self-locking ventilating machines. The glazing strips are of clear Gulf cypress, fitted to special castings at either end, and firmly fastened to iron purlins. The house is provided with non-freezing gutters and is glazed with the best greenhouse glass. The benches are of iron, with porous tile bottoms and cypress sides. Two lines of sash at the sides and two at the ridge are connected with geared machines which give perfect control over ventilation.

The frame of the house possesses strength, and at the same time offers little obstruction to light. In plan and details the structure is modern; embracing the best that is known in green-

house construction. It was purchased of the Lord & Burnham Company, of New York City.

In addition to this greenhouse there has been added a forcinghouse, 20x50 feet, made of cypress frame resting upon brick walls, and a glass connection between the forcinghouse and the laboratory, which is 14x14 feet. In this latter house the sides are carried perpendicularly to the height of nine feet, affording space for tall plants.

Orchards and Grounds.—The orchards and grounds are carefully laid out and planted to ornamental shrubs and trees. Here are the plantation of forest-trees, the kitchen garden, with its many varieties of vegetables and small fruits, hot-beds and cold frames.

Agricultural Hall.—This is a very attractive building, constructed of red stone and brick. The entire upper floor is devoted to a spacious hall for an agricultural museum. The first floor is divided into a hallway and four large, comfortable rooms. Here are found the office of the Dean of Agriculture and his assistants, churning rooms, dairy laboratory, and seed rooms. The basement has four apartments, which are used for heating apparatus and storage.

Farm and Stock.—The farm contains 240 acres, nearly all under cultivation. In addition to this there has been recently purchased 360 acres of excellent grazing land near Fort Collins, containing a reservoir and the spring from which the college grounds are supplied with drinking water.

The live stock consists of Clydesdale grade draft horses, Shorthorn, Ayrshire, Polled Angus, Hereford, Holstein and Jersey cattle, Shropshire, Oxford, Southdown and Rambouillet sheep, and Berkshire, Tamworths and Poland China hogs. Other representative breeds of stock will be added as rapidly as means and accommodations will permit.

Mechanical Engineering Building.—This building includes two large main portions, two stories high, and an ell, one story high.

The first story of the north front of the building is occupied as follows: The east end contains the office of the professor in charge. The tool room is at the middle of the south side of the room; it is supplied with a good assortment of small tools, such as taps, dies, reamers, gauges, and milling machine cutters. The

tools for cutting, threading and fitting iron pipe are also kept in this room. These tools will handle pipe from one-quarter inch up to two inches. Taps are provided for each size of pipe.

The machine shop is also on this floor and occupies the middle portion of the building. It is supplied with a fine assortment of tools for working the metals. Around the room are benches, with iron vises fitted for the work in chipping and filing.

There are in this room two 16-inch engine lathes, two 17-inch engine lathes, two 14-inch engine lathes, one 13-inch engine lathe, one speed lathe, one 20-inch drill press, one 6-foot planer, one 15-inch shaper, one universal milling machine with gearcutting attachments, a grindstone, an emery wheel stand carrying two wheels, a universal tool and cutter grinder, a twist drill grinding machine, an emery stand, carrying two wheels 16 inches in diameter, a 36-inch grindstone, a 10-inch sensitive drilling machine, and one power metal saw.

An extra bench, standing near the middle of the room, is fitted with a pipe vise and furnished with the necessary tools for instruction in pipe fitting.

At the west end of this story is a well-lighted classroom used for instruction in Mechanical Engineering. This room contains a number of good models. The upper story of this portion of the building is devoted to bench and machine work in wood. There are 37 benches, each supplied with a complete set of carpenter's tools. The other appliances are, one 24-inch surface planer, one 30-inch band saw, one scroll saw, one double circular saw bench, one foot mortiser, one steam glue heater, eight wood-turning lathes, a 16-inch patternmaker's lathe with compound rest, a wood trimmer, a 36-inch grindstone and a good supply of clamps.

In the lower story of the east main portion of the building is the engine room, containing the 50-horse-power Corliss engine, which furnishes power for the entire plant. This engine is supplied with indicator attachments. The students are given an opportunity to take and work up indicator cards. For this purpose the department has a pair of Crosby indicators. A dead weight gauge tester affords a means of correcting steam gauges.

Opposite the engine-room is the wash-room, with lockers for the use of 100 students.

The drawing-room, which occupies the upper part of this

building, has accommodations for fifty students. In the ell portion of the building are found iron storeroom, blacksmith shop, and foundry.

The blacksmith shop is fitted up in a most convenient and modern form. There are twenty-five forges, all attached to a system of pipes for supplying a blast to the fires and for taking the gases from the forges. Each forge is supplied with a complete set of smith tools. There are extra tools, sledges, vises, a pair of metal shears and a power hammer.

The foundry is at the west end of the ell and has very complete appointments. It contains a 20-inch cupola, a brass furnace, a core oven, and about 200 flasks of various kinds and sizes. It is well supplied with the necessary bench and floor tools, ladles, shanks, skimmers and a moulding machine. Most of the equipment for this room, including the cupola and brass furnace, was made by the students.

Mechanical Engineering Laboratory.—The building is situated directly south of the present Mechanical Engineering Building, and is known as the Mechanical Engineering Laboratory. It is 40 feet wide and 60 feet long, and built of pressed brick.

The object of the work of the Laboratory is to give the advanced students an opportunity to make investigations of the physical properties of materials of construction entering into buildings, machinery, and other structures; and also to make tests and examinations of different kinds of boilers, engines, motors, pumps, and all kinds of mechanical appliances which may be obtained for the use of the department. A number of pieces of apparatus have been given by generous parties for carrying on this work.

As a great deal of the work of investigation is along the line of steam engineering, a new 80-horsepower boiler is placed in the Laboratory in order to have the steam needed close at hand. The boiler is so arranged as to allow of its being subjected to regular commercial and scientific tests, and students are instructed how to find the horse-power, how to test for strength, how to test the quality and quantity of the steam furnished by the boiler, and to obtain its efficiency.

To test the quality of steam, that is, to find out the amount of moisture in it, there are on hand four different styles of calorimeters, a Carpenter throttling calorimeter, a Carpenter continu-

ous calorimeter and a Barrus calorimeter. There is also a calorimeter devised and made by the students. In connection with these calorimeters there are thirteen thermometers of a high degree of accuracy. These are cylindrical bulb thermometers. There are also several high grade steampipe thermometers, designed to get the temperature of steam flowing through pipes.

A draft gage is also provided for measuring the draft of the smoke stack in connection with the boiler trials. Provision is also made to secure samples of the chimney gases for chemical analysis, in order to assist in ascertaining the thoroughness of combustion of the fuel. The temperature of the gases may also be taken with a suitable instrument which is provided. Several mercurial pressure and vacuum columns are provided. All instruments are carefully calibrated before tests are made with them.

A large water tank and weighing scales are provided, so that the amount of water used and turned into steam may be ascertained while the trial is being made. Three steam engines are in the building. One is of 12-horse power, made by the Denver Engineering Company; one of 6-horse power, another of 5-horse power; the latter was made by the students. These engines may be run with different loads and at different speeds. Upon these engines brakes are placed, so that a load on the engine may be accurately measured. The students are instructed how to set eccentrics and valves, and how to ascertain the horse power of the engine. For this latter purpose, there are on hand two Crosby steam engine indicators, with five springs each, for varying pressures of steam. Brumbo pulleys are ready for use with the indicators and are used to make the stroke of the indicators proportionate to the stroke of the engine. There is also a reductor at hand, for the same purpose, made by Schaeffer & Budenburg, New York.

A United States Observatory barometer, made by Henry J. Green, of Brooklyn, is in the building, to be used in connection with the boiler, engine and pressure tests of various kinds. The airbrake appliance, made by the Westinghouse Airbrake Company, is in this building. It consists of a complete outfit for engine, tender and one car, including all the tanks, valves and engineer's triple valve. Besides using this for the purpose of investigating, the air pump attached is used to furnish air to other

kinds of pneumatic machinery. There is also a quick action triple valve, made by the New York Airbrake Company.

There are micrometers and verniers ready for use, which will measure in thousandths of an inch. An ingenious water meter registers the number of gallons of water passing through a pipe in a given time. This is used in connection with the hydraulic work. The planimeter is used for measuring the area of diagrams drawn upon paper, and is used in connection with the figuring out of test diagrams of various kinds. It is of the Amsler design. Revolution counters are used in connection with the engine and motor tests.

There are two steam pumps in this laboratory, one made by George F. Blake, of New York, the other by M. F. Davidson, of Brooklyn, N. Y. The setting of valves and the testing of the efficiency of these pumps are features of the work. Nine steam gages have been presented by different makers, which give a good variety upon which to make investigations. For testing gages two first-class machines are ready; one for testing pressure gages, the other for testing vacuum gages.

Two sizes of the Hancock inspirator furnish means of studying this highly interesting instrument. Tables are arranged at convenient intervals in the room at which the students are first required to make their theoretical and mathematical calculations, and afterwards compare the practical results of the tests with these calculations. Tabulated results of all tests are made upon blanks of suitable form.

Civil and Irrigation Engineering.—The building formerly used as a Dormitory is at present used as the Department of Civil and Irrigation Engineering.

The main classroom is on the second floor. It has seats for a class of forty-six students. The windows are fitted with shutters, in order that the solar projection apparatus may be used for illustration of topics under instruction. The table is fitted with water-tank and pneumatic troughs. A room on the second floor is used for storage of the instruments used in class instruction and as a museum of irrigation and engineering appliances. On the first floor are the offices, and the room for carrying on the work of the section in the Experiment Station. The offices of the director of the Experiment Station are also in this build-

ing. There is also a draughting-room for the Engineering students.

The basement is taken up with the physical and the hydraulic laboratories. In the physical laboratory are firm tables provided for the students, with place for each student, where the apparatus may be left from one day to another without disturbance. A concrete floor to lessen injurious vibration is used to make the room available for the use of delicate instruments.

The hydraulic laboratory has tanks and a large set of suspended scales, weighing 5,000 pounds, for testing the flow of water through orifices and over weirs. Here also is placed a Pelton water motor and the cement-testing instrument, together with other equipment, pipes, pressure gages, etc., for experimentation. The experiments in measuring water in streams are carried on in the adjacent streams.

In Physics, the Department has an excellent working equipment in all branches, the equipment having been selected for its usefulness, and for its adaptability to experimentation as well as for illustration. It includes a set of United States Standard Weights and Measures, prepared for the College under act of Congress; micrometers, balances, spherometers, gages, gyroscope, air pump and accessories, thermometers, mirrors and lenses, projecting lantern, electrical machines, dynamo, batteries, standard B. A. ohm, Queen 100,000 ohm resistance coil, astatic, sine, tangent and d'Arsonval and other galvanometers; Edelmann ohmmeter, quadrant, electrometers, voltmeters, telephones, standard cells, a complete set of standard units, and much minor equipment.

For use in Engineering and Hydraulics it has Colorado, Lallie, Price, Fteley current meters, the latter with an electrical recording attachment; a Darcy-Pitot tube; registers to record the rise and fall of water, one imported from Paris to record, electrically, at a distance of some miles; large scales and tanks for experimentation on the flow of water through orifices and over weirs, and to study the laws of flow; pressure gages; photographs and plans of hydraulic structures; and a collection of slides for the lantern made from negatives taken in this and other countries. A water motor, presented to the Department by the Pelton Water Wheel Co., a water meter presented by

the Equitable Meter Co., and a centrifugal pump add to the equipment.

In Engineering instruments, it has Gurley and Randolph compasses; a Foster, two Gurley, a Young, and several Buff and Berger transits; eight levels, including makes of Randolph, Gurley and Buff and Berger; plane table of Keuffel and Esser; six compasses; leveling rods of various patterns; chains and tapes for land surveying and for engineers' use; hand-level, planimeter for determining areas; integrator, apparatus for photographic surveying, odometer, etc.

A Fairbanks cement tester, with full set of moulds, gives the means of testing the strength of cements to 1,000 pounds per square inch. A large 50,000-pound testing machine gives the opportunity to test other materials within its limits.

A complete set of meteorological instruments, many of them imported, is in daily use. This set includes barometers, thermometers, psychrometers, anemometers, statoscope, pluviometers, actinometers, solar and terrestrial thermometers, evaporation tanks, soil thermometers, etc.

Domestic Science.—The Department of Domestic Science occupies a building which is fitted up for a home. On the lower floor is a large kitchen 25x34 feet in size. It is well lighted and contains furniture and classroom utensils so that a large class can be accommodated. Adjoining this room is a smaller kitchen, which is very convenient for extra work, or for use on occasions of entertaining, since it opens into the dining room. This latter room is used only for the smaller functions and special demonstrations in table setting, sewing, etc.

At the end of the hall is situated the laundry, which is furnished with porcelain-lined stationary wash-tubs, laundry stove and tank, cupboard, ironing-boards, etc. The other room on this floor is a store-room.

On the second floor, to the right on entering the hall, is a reception room, suitably furnished. Back of this is a bedroom, which is designed to be a model room. Another room opens to the right at the lower end of the hall. This contains two apartments, conveniently equipped with bath-room appliances. These rooms are for the use of such young women in the College as may desire to use them. Situated as they are, immediately over the laundry, there is no difficulty in heating the water.

The classroom, also 25x34 feet, is located on the south side of the building immediately over the kitchen. It is furnished with sewing machines, tables and large cases. The latter are used as receptacles for work and an individual compartment is supplied each student.

This same room serves additional purposes. Sometimes it is a reception-room, at other times a dining-room; as the same tables are used for cutting, sewing and dining. The chinaware is also kept in this room in nicely arranged closets. From the rear of the classroom one enters the fitting-room, which, in addition to the general furniture, contains a large closet where garments in process of making, materials, etc., can be protected.

The accommodations and appliances are ample for classroom and laboratory work in everything connected with household management.

Military Science and Tactics.—This Department has two hundred and fifty cadet rifles and two 3-inch rifle field pieces from the War Department. Each year there is issued a supply of ammunition for both branches of service, in order to give training in infantry skirmish drill, target practice and artillery firing.

The Lavatory.—Cleanliness, health and good taste are not only made possible, but inculcated by the use of this building which is a model of convenience and modern appliances.

The walls are of pressed brick, the floor tile, the furnishings marble with the best plumbing.

Baths—both tub and shower—are provided. Also lockers for the students of the Athletic Association.

The institution is absolutely sanitary since the erection of this perfectly appointed Lavatory.

The New Electrical Engineering Building and Central Heating Plant.—A two-story building of gray sandstone has recently been completed. The central heating plant will be located in the north half of the first story. From this all the buildings will be adequately and safely heated at far less expense than by the present system.

In the south half of the first story will be located the central lighting plant, the dynamo and motor laboratory and the storage battery room. All the buildings will be lighted from this plant.

The second story of this building is occupied, exclusively, by the Department of Electrical Engineering. Here are located the Electrical Engineering lecture room, general laboratory, designing room and lamp testing room, and the office of the professor in charge.

The lecture room is provided with an ample set of lecture apparatus, an A. T. Thompson's lecture room lantern and reflectoscope. The room will comfortably seat fifty students.

The general laboratory contains numerous resistance boxes, standard resistances and cells, various types of D'Arsonval, ballistic and tangent galvanometers, Weston voltmeters, ammeters and wattmeters for both alternating and direct current, electro-dynamometers, a Crompton potentiometer, quadrant electrometer and other apparatus commonly found in electrical laboratories.

The lamp testing room is fitted with a standard photometer, equipped with a Lummer-Brodhun screen, rotator and universal lamp holder whereby mean horizontal and mean spherical candle power are readily measured. The room is also fitted with all other necessary apparatus for making complete lamp tests.

The Horse Barn.—After remodeling the old barn at an expense of eighteen hundred dollars for the use of cattle, it was necessary to erect a building for horses. This was done at a cost of six thousand dollars, a special appropriation from the State. It is said to be the most perfect barn of its kind in the West. It will serve as an educational model for both students and visiting farmers. It was designed by a student of the Department of Architecture.

The Hog Barn.—Believing that a great industry has been most unwisely neglected in Colorado it is proposed to carry on extensive experimental work in the breeding and feeding of hogs. To this end a suitable building has recently been erected. It also will serve as an educational model, every device being employed conducive to the health and growth of the animal.

Scientific and Technical Apparatus.—All the departments of science have elaborate, modern and costly equipment. Fine cabinets of specimens are to be found in the Museum. Laboratory work in agriculture and dairying, horticulture and botany, chemistry, physics, geology and mineralogy, comparative

anatomy and entomology is done with the aid of apparatus representing a cost of \$40,000.

The departments of Mechanical Engineering and Civil and Irrigation Engineering have a combined equipment worth over \$32,000.

Work has been begun upon a stock judging pavilion, to be used also for the Farmers' Course, in January, and upon a farm machinery building.

The display of fine stock and of farm machinery is open at all times to visitors.

First and Second Sub-Freshman Years.

**Leading to Freshman
Year of All Courses
and Junior Year of
Commercial Course...**

FIRST SUB-FRESHMAN YEAR.

FALL TERM.

Algebra, 5.	}	P. M.—Drawing and Recitations.
Elementary Rhetoric, 5.		
Ancient History, 5.		

WINTER TERM.

Algebra, 5.	}	P. M.—Shop. Domestic Science
Elementary Rhetoric, 5.		
$\frac{1}{2}$ Physiology, 5.		
$\frac{1}{2}$ Ancient History, 5.		

SPRING TERM.

Algebra, 5.	}	P. M.—Drawing and Recitations.
Elementary Rhetoric, 5.		
American Literature, 5.		

SECOND SUB-FRESHMAN YEAR.

FALL TERM.

Geometry, 5.	}	P. M.—Physical Laboratory.
Physics, 5.		
*German, French or Spanish, 5.		

WINTER TERM.

Geometry, 5.	}	P. M.—Physical Laboratory.
Physics, 5.		
German, French, or Spanish, 5.		

SPRING TERM.

Geometry, 5.	}	P. M.—Shop. $\frac{1}{2}$ Summer Gowns. $\frac{1}{2}$ Cooking.
Elem. Botany, 5.		
German, French, or Spanish, 5.		

Note.—Elementary Rhetoric and Composition is continued informally throughout the second sub-freshman year. For particulars consult course of study of Department of Rhetoric and Philosophy, page 112 of this catalogue.

*Agricultural Students will elect German.

Commercial Students will elect German or Spanish.

Electrical Engineering Students will elect French or German.

Schedule of Agricultural Courses

COURSES OF STUDY.

The instruction offered in agriculture has been divided in this catalogue for the first time into five departments, as follows:

1. Department of Animal Husbandry (page 49).
2. Department of Agronomy (page 46).
3. Department of Horticulture (page 57).
4. Department of Veterinary Science (page 61).
5. Department of Agricultural Chemistry (page —).

The students in all the departments of the Agricultural Division are required to take the same course of study during the Freshman and Sophomore years. In the beginning of the Junior year those students desiring to specialize in either Horticulture or Veterinary Science may elect the course of study offered in these departments. All the work offered in the Senior year of the Agricultural course is made elective, which gives the student a still wider choice in selecting his major study. He may elect a course in either Animal Husbandry, Agronomy or Agricultural Chemistry at the beginning of his Senior year. The professor in charge of the division will direct the selection of supplementary studies to make at least fifteen hours of class room work during the Senior year.

The Agricultural College is designed primarily to teach the sciences that underlie the successful practice of modern agriculture with sufficient English, German, mathematics, history and other supplementary studies to develop the minds of the agricultural students to the intellectual level of the best educated men in any profession. Special attention is given, however, to Live Stock Husbandry, and to the various operations of farming.

Facilities for Instruction.—Our facilities and equipment for offering instruction are almost unsurpassed by any agricultural school and they are continually being increased and improved. Classroom work is made more interesting by photographs, lantern slides and museum specimens.

Our dairy laboratory is well equipped with modern apparatus. A gasoline engine furnishes the power to run the separators and churns, and a boiler furnishes steam for the large milk tester, sterilizer and pasteurizer, and also for heating water. Here are different forms of churns, separators, butter workers, and milk and curd testers. We now have well equipped sterilizers, incubators and all the equipment necessary for practical work in Bacteriology. The students are given enough instruction in this line to enable them to understand and control these tiny organisms which may be so beneficial or harmful to the dairyman. The student handles the milk from the cow to the butter tub or print, by either the separator or deep cold setting process, and learns methods of valuing milk and paying for it according to test.

The College farm of two hundred and forty acres is happily situated for the purposes of instruction. Here we have exemplified most of the problems of getting water to land and of carrying off the surplus and seepage that will arise anywhere in the state. The main irrigation water supply is the pipe line nearly a mile from the canal. The carrying away of surplus water and the reclaiming of seepage land is shown in all its phases. Some of the finest crops on the farm are grown on what was once a cat-tail swamp and which has been reclaimed by a system of tile drains.

Especially valuable to the student is the fact that the farm is a part of the Experiment Station. He has the advantage of watching the several experiments and noting the results. Here he can see and become acquainted with all the new forage and grain crops that are heralded by the seed trade, learn their adaptability to Colorado soils and conditions, while reference to the very complete library of the publications of all the other experiment stations will enable him to form a correct judgment as to their value for Colorado as compared with their usefulness in other parts of the country. This feature alone will save the student a great deal of time and money when he attempts to carry on a farm of his own.

The agricultural students have formed an Agricultural Club which does most excellent work. It will be seen that in addition to our general equipment, the student is thrown in contact with most active agricultural work in all its branches, so his

education is not confined to mere class room routine. While our graduates of the past have become most successful in their chosen work, the graduates of the future have much to look forward to in increased facilities and advantages.

The Live Stock Department of the College is one of the most complete in the West. Small herds made up of the most perfect specimens of Shorthorns, Aberdeen Angus, Hereford, Red Polled, Holstein and Ayrshire cattle are maintained for the use of students in their livestock judging exercises. Several choice representatives of four breeds of sheep and four of swine are also maintained, which gives the student opportunities for study and comparison.

We are particularly well equipped in the Horse Department, and it may be safely said that at no other institution in the United States is there offered anything to compare with the opportunities to be found here for obtaining a thorough training in horse judging, breeding, feeding and general care and management. The location of the United States Government horse breeding experiment station on our College farm provides unequalled facilities for thorough work with this class of live stock. Already we have twenty head of the finest type of carriage horses to be found in America, and this number will be greatly increased in a few years.

Through the liberality of Mr. J. C. Osgood, of Redstone, Colorado, we can offer to deserving students in the Agricultural Course a very helpful aid through what is now termed "The Osgood Loan Fund." In transferring to the College his entire herd of imported Aberdeen Angus cattle to be retained or disposed of as desired, it was arranged that the proceeds from the sale from this herd of such cattle as were not required by the College, together with one-half of the produce of such animals as were kept, should be set aside as a perpetual fund to be loaned to deserving students in the Sophomore, Junior and Senior classes of the Agricultural Course in the College. Such amounts as may be needed to aid deserving students that may be earning their expenses while in College will be advanced to them without interest until they have completed their course, after which time a moderate rate of interest will be charged until the amount is repaid into the loan fund to be used again,

and in this way the good accomplished may be continued indefinitely.

Our College has another very liberal and genial friend and well wisher in the person of Mr. John Clay, of Chicago. Mr. Clay has recently offered \$250 in scholarships to be competed for by students in the Agricultural Course. It has been decided to have the successful students use these scholarship funds in defraying their expenses while attending the International Live Stock Exposition at Chicago.

AGRICULTURAL COURSE.

FRESHMAN YEAR.

FALL TERM.

Anatomy, 5.	}	P. M.—Botany, 2.
Rhetoric, 5.		Farm Mechanics, 10.
Botany, 5.		*Clinics.
*Farm Mechanics, 5.		

WINTER TERM.

Anatomy, 5.	}	P. M.—Farm Mechanics, 10.
English Literature, 5.		Clinics, 5.
Rhetoric, 2.		
Themes, 3.		

SPRING TERM.

Physics, 5.	}	P. M.—Physical Laboratory, 10.
Materia Medica, 5.		Farm Mechanics, 10.
Farm Mechanics, 5.		

SOPHOMORE YEAR.

FALL TERM.

Physiology, 5.	}	P. M.—Zoological Laboratory,
Zoology, 5.		10.
Breeds of Livestock, 5.		Stock Judging, 5.

WINTER TERM.

½ Breeds of Live Stock, 5.	}	P. M.—Botany, 10.
½ Chemistry, 5.		Clinics.
Physiology, 5.		
Horticulture, 5.		

SPRING TERM.

Field Crops, 5.	}	P. M.—½ Field Crops, 10.
English History, 3.		½ Entomological Labo-
Entomology, 5.		ratory, 10.
Anatomy, 2.		Stock Judging, 5.
*Materia Medica.		

*For Veterinary students only.

JUNIOR YEAR.

FALL TERM.

Feeds and Feeding, 4.	}	P. M.— $\frac{1}{2}$ Stock Judging, 10. $\frac{1}{2}$ Chemistry, 10.
Elementary and Inorganic Chemistry, 5.		
Veterinary Medicine, 3.		
Irrigation and Range Law, 3.		

WINTER TERM.

Soils; Fertility and Management, 3.	}	P. M.—Chemistry, 10.
Physiological Botany, 6.		
Advanced History, 3.		
Inorganic Chemistry, 5.		

SPRING TERM.

Elementary Mineralogy and Geology, 4.	}	P. M.— $\frac{1}{2}$ Chemical Laboratory, 10. $\frac{1}{2}$ Dairying Laboratory, 10.
Animal Parasites, 1.		
Dairying, 4.		
Organic Chemistry, 5.		
Advanced History, 3.		

SENIOR YEAR.

FALL TERM.

International Law, 3.	}	P. M.—Analytical Chemistry, 10. Stock Judging, 5. Agronomy, 10.
Animal Husbandry, 5.		
General Bacteriology, 5.		
Agricultural Chemistry, 5.		
Veterinary Science, 5.		
Literature, 5.		
Agronomy, 5.		

WINTER TERM

Political Economy, 3.	}	P. M.—Agronomy, 10. Embryology, 6. Histology, 4. Chemistry, 10.
Animal Husbandry, 5.		
Literature, 4.		
Embryology, 2.		
Evolution, 1.		
Histology, 1.		
Agronomy, 2.		
Chemistry, 5.		

SPRING TERM.

Fiction, 5.	}	
U. S. Constitution, 4.		
Advanced Botany, 5.		
Chemistry, 5.		P. M.—Chemical Laboratory, 10.
Animal Husbandry, 10.		Agronomy, 10.
Agronomy, 5.		Animal Husbandry, 10.
Hydraulics, 5.		
Veterinary.		

NOTE.—Students in the Senior class are required to elect at least fifteen hours of class room or research work per week as directed by the professor in charge of the department.

DEPARTMENT OF AGRONOMY.

Agronomy is the science of the field and its crop. It treats of Farm Mechanics; tools, machinery, fences and buildings of the farm; Field Crops: Their classification, production and improvement; Soil Fertility: Improvement of soils and preservation of their fertility; Farm Management: The application of economic business methods to farm practices.

Agronomy I—Farm Mechanics.

This course includes the study of farm machinery, buildings, motors, fences and the construction and maintenance of country roads.

Shop work will be given in wood and iron during the fall and winter terms of the Freshman year, Laboratory work in the spring term of Freshman year, testing, calibrating and running the various kinds of labor saving machines now used on the farm. Spring term, Freshman year—recitations five hours per week, laboratory ten hours per week.

Agronomy II—Field Crops.

This course includes the study of germination, plant growth, grain judging and the improvement of the various crops of the farm through seed selection, plant breeding and culture methods. Recitations five hours per week. Laboratory ten hours per week for one-half the term. Time—Spring term, Sophomore year. Required—Freshman Botany, Sophomore Horticulture.

Agronomy III—Soil Fertility.

This course consists of the study of soil culture, soil moisture, crop rotation and the influence of green manures, barnyard manures and the various commercial fertilizers upon the soil.

The class room work is supplemented by pot and field experiments demonstrating the fundamental principles of soil fertility.

Recitations four hours per week. Laboratory eight hours per week. Time—Winter term, Junior year. Required—Agronomy II, Sophomore Chemistry and Fall term Chemistry Junior year.

Agronomy IV—Research Work in Soil Fertility.

This course is especially designed for students who have completed Agronomy III, and desire to continue their investigation of the soil. Problems of special interest regarding the fertility and productiveness of Colorado soils will be studied. Time—Fall term, Senior year. Five hours class and research work, ten hours laboratory work per week.

Agronomy V—Special Crops.

This course is arranged so as to permit the student to pursue independent investigations with those crops in which he is particularly interested. Crops adapted for the non-irrigated regions of the state will be especially considered. Research work in this course together with laboratory work ten hours class. Required—Agronomy, I, II, III and IV.

Agronomy VI—Farm Motors.

A comprehensive course in traction engines will be given, construction and operation of gasoline engines; windmills and their construction will be studied and experiments carried on to determine the amount of power to be obtained from windmills with different velocities of wind. The relative efficiency and economy of the different farm motors will be fully discussed and demonstrated by experiments conducted by the class. Required—Agronomy I, II, III and IV.

Agronomy VII—Fences and Gates.

This course consists of the study of fence construction, designing gates, operating fence building machinery and the testing of fence wires. Required—Agronomy I and II.

Agronomy VIII—Improvement of Farm Crops.

This course is a study of the principles that underlie the development and breeding of the different field crops. It is a study of the plans and methods used in Field Nursery work, both in Europe and America. Required—Agronomy II, Freshman, Sophomore and Junior Botany.

Agronomy IX—Farm Management.

This consists of a study of farm practices of the very best and most successful farmers; different methods employed in garden and truck farming, fruit farming, grain farming, ranching and mixed farming; fundamental principles employed in managing small farms and large farms. This course is designed to prepare young men for farm managers and superintendents. There is a growing demand for competent men for these positions.

Post graduate work in Agronomy is offered to graduates of any college whose diploma is approved by the faculty of the Colorado Agricultural College.

The work here presented is designed to better prepare the graduate student for special work in agriculture.

I. Grain Judging.

This includes score card practice and grading samples of wheat, oats, barley and corn. Laboratory work together with class and research work upon preparation of seed-bed, seeding, harvesting, adaptation of grains to climate and soil conditions, cost of production and uses of crop grown. Arrange time.

II. Field Crops.

1. Special study of forage crops—alfalfa, sorghum, field peas, rape, Kaffir corn, etc.
2. Special study of sugar beets.
3. Seed testing and seed germinations.
4. Special study of wheat.
5. Special study of oats.
6. Plant breeding as applied to field crops.
7. Study of the economic methods of growing and handling the various crops of the field.

III. Farm Mechanics.

1. Traction tests.
2. Farm machinery.
3. Plotting the farm.
4. Road construction.
5. Farm building construction.
6. The investigation of grain drills.
7. Experiments with different kinds of plows—walking and sulky—disc and moldboard.

IV—Farm Management.

1. Advantages found in a regular and systematic crop rotation.
2. Special vs. mixed farming.
3. Some wasteful farm practices and how to remedy them.
4. Crop methods for irrigated farms.
5. Crop methods for semi-arid farming.
6. The thorough tillage system of farming.
7. A method of farm accounts.

ANIMAL HUSBANDRY.

Study I.—Breeds of Live Stock.—One and one-half terms in the Sopohomore year are given to the study of breeds of horses, cattle, sheep and swine. Each breed is taken up separately and studied from its earliest written history. The environments under which the breed was developed, the men who had been prominent in establishing the breed and the methods of improvement are reviewed. The characteristics and special adaptability of the breeds are covered thoroughly, also the importations into the United States, the numbers that have been bred and the popularity that they have attained in this country. The facts are given together with all the detail matter that goes to give a student familiarity with each breed of live stock. This subject is taught in text books, by lectures and demonstrations and is given one hour a day five times a week.

Study II.—Market Types of Sheep and Swine.—This course covers the judging of mutton and wool sheep and bacon and lard hogs. Score cards are used until the student is familiar with the desirable and undesirable qualities of each type and has

learned just how much stress to lay on the different parts of the animal. Later, groups of five to eight animals are brought before the class and each student is required to award a first, second and third place and give detailed reasons for so placing. The professor in charge reviews the merits and defects of each animal and places them in the order of their merits. The equivalent of six hours per week is given to this work during the fall term of the Sophomore year.

Study III.—Market Types of Horses and Cattle.—This course is a continuation of Course II. and covers the judging of beef and dairy cattle and light and heavy horses. Score cards are used at first, and then groups of five to eight animals are brought before the class to be placed according to their merits. Judging equivalent to six hours per week during the spring term of the Sophomore year is given.

Study IV.—Feeds and Feeding.—This course includes a study of the anatomy of the digestive tract of farm animals, digestion, animal nutrition, source of muscular energy, composition of animal bodies, feeding standards and the composition and by-products of the leading cereals. This subject is taught from text books and by lectures one hour a day four times a week during the fall term of the Junior year.

Study V.—Stock Judging.—This course embraces the judging of representatives of the different breeds of sheep and swine according to their official breed standards. Judging equivalent of eight hours per week is given.

Study VI.—Dairying.—This course includes the study of the secretion and composition of milk, the separation of cream by gravity and by centrifugal separation, the Babcock test for butter fat, ripening of cream, churning of butter, the bacteria of milk, cheese making, etc. One hour a day four times a week is given to this work during the spring term of the Junior year.

Study VII.—Dairy Laboratory.—This course includes the practical work of handling milk, running cream separators, ripening cream, making starters, churning, working, salting and packing butter and making cheese. Two hours daily during one-half of the spring term, Junior year, are devoted to this course.

Study VIII.—Stock Judging.—This course includes the judging of representatives of the different breeds of horses and cattle according to the official breed standards. Judging equivalent of six hours per week one-half of term, is given in this course.

Study IX.—Feeds and Feeding.—This course is a continuation of Course IV. It covers the feeding of farm animals of all classes from birth to maturity and the relative values of the different feeding stuffs for each class of live stock. Five hours a week are given to this work during the fall term of the Senior year.

Study X.—Animal Breeding.—This course includes a study of the principles of breeding, embracing heredity, atavism, variation, selection, etc., with the methods of in-and-in breeding, cross breeding, etc. The methods of breeding practiced by our leading improvers of live stock are also studied. Five hours each week are given to this work during the winter term of the Senior year.

Study XI.—Animal Husbandry.—This course embraces lectures and practical work in the care and management of live stock. A certain amount of practical work in feeding and grooming, watering, etc., of the different classes of live stock will be required of each student during this course.

Study XII.—During the Winter and Spring terms of the Senior year, students in the Agricultural course that elect Animal Husbandry as their major study, will be given advanced research and investigational work with live stock, combined with lectures and library work.

Students in the Senior year of the Animal Husbandry and Agronomy Departments will be required to submit an acceptable thesis on some line of original investigation before graduation.

TWO YEARS SHORT COURSE IN AGRICULTURE.

The Agriculture of Colorado is unique. Much of it is along new lines. There is need of instruction and direction to get started right. There is no time to lose. Many must commence work within the next few years or lose many of their golden opportunities. A great many young men have not the time,

means or school preparation to enter upon the long course in Agriculture.

The Board of Agriculture has ordered the following Short Course to meet an immediate and urgent demand. Beginning December 1st, when the crop work is done, it will continue three months. The time is divided into two sections of six weeks each. Much can be gained in a single section, but the full three months will give more than double the results. The work is so arranged that a second three months can be had the following year, the studies and demonstrations being more advanced. With this two years' course in Agriculture and Animal Husbandry, any ambitious, plucky young man can get a considerable hold upon Colorado farming and ranching. It will greatly assist him in working out the problems for himself.

The strongest teachers in the College will devote their best energies to this Short Course. It gives great promise of success.

One must be at least seventeen years of age, and capable of passing an examination in arithmetic, reading and penmanship to enter the course. A fee of three dollars for each year will be charged. All students enrolled in the course will have their names placed upon the free Bulletin List of the College. They will enjoy also all the privileges of the College, the boarding clubs, libraries, gymnasium and the Agricultural Club. They will not be required to take the military drill.

SHORT COURSE.

FIRST YEAR.

FIRST TERM.

A. M.

- 8:00 8:50: Plant life.
9:15 10:05: Anatomy of live stock.
10:15 12:05: Stock judging.

P. M.

- 1:30 2:30: Breeds and types of live stock.
2:30 3:30: Farm crops.

A. M.

SECOND TERM.

- 8:00 8:50: Feeds and feeding.
9:15 10:05: Gardening and floriculture.
10:15 12:05: Stock judging, 3 weeks.
Sheep judging, 3 weeks.

P. M.

- 1:30 4:00: Dairying, 3 weeks.
Agricultural engineering, 3 weeks.

SECOND YEAR.

FIRST TERM.

A. M.

- 8:00 8:50: Farm management.
9:15 10:05: Livestock—feeding, care, management.
10:15 11:05: Agricultural chemistry.
11:15 12:05: Horticulture.

P. M.

- 1:30 3:30: Stock judging.
4:00 6:00: Practical stock work.

A. M.

SECOND TERM.

- 8:00 8:50: Insects and animal parasites.
9:15 10:05: Farm management.
10:15 11:05: Veterinary science.
11:15 12:05: Bacteriology.

P. M.

- 1:30 3:30: Farm engineering.
4:00 6:00: Live stock and veterinary practice.

THE FARMERS' SHORT COURSE.

A great majority of farmers and farmers' sons in Colorado are so situated that it is impossible for them to avail themselves of the regular College course in Agriculture and Stock Raising. To accommodate these and to broaden the scope of our agricultural education in this State, the College will offer a short course in practical agriculture in January and February, 1906. This course will be designed particularly for the busy practical farmer-stockman who has already had experience in the management of farms and the care of live stock. Particular attention will be given to live stock subjects such as judging, feeding, breeding, and the care and management of the various classes of stock that are adapted to our Western conditions.

Lectures and discussions will also be delivered on the various phases of general agriculture such as potato growing, cultivation of the soil, farm crops, and the application and usage of water in irrigating.

A short course of lectures on manures and fertilizers will also be given. Farmers' wives and daughters will find subjects of interest in the farm dairy work and lectures, and also in the lectures on Domestic Science and in the Horticultural and Vegetable garden instruction.

A circular outlining the scope and character of the work offered will be issued early in September. For further particulars address Prof. W. L. Carlyle, in charge of the course.

SHORT COURSE IN DOMESTIC SCIENCE AND AGRICULTURE.

FIRST YEAR.

FIRST TERM.

A. M.

- 8:00 8:50: Plant life.
9:15 10:05: Hygiene and physiology.
10:15 12:05: Sewing.

P. M.

- 1:30 2:30: Breeds and types of live stock.
2:30 3:30: Farm crops.

SECOND TERM.

A. M.

- 8:00 8:50: Feeds and feeding.
9:15 10:05: Gardening and floriculture.
Stock judging, 3 weeks.
10:15 12:05: Home nursing, 3 weeks.

P. M.

- 1:30 4:00: Dairying, 3 weeks.
Cooking and laundry, 3 weeks.

SECOND YEAR.

FIRST TERM.

A. M.

- 8:00 8:50: Cookery.
9:15 10:05: Cookery and dressmaking.
10:15 11:05: Agricultural chemistry.
11:15 12:05: Horticulture.

P. M.

- 1:30 3:30: Domestic science.

SECOND TERM.

A. M.

- 8:00 8:50: Insects and animal parasites.
9:15 10:05: Domestic science.
10:15 11:05: Domestic science.
11:15 12:05: Bacteriology.

P. M.

- 1:30 3:30: Domestic science.

TWO YEARS SHORT COURSE IN DOMESTIC SCIENCE AND AGRICULTURE.

Practical education for young women has had a slow development. It has remained for the Agricultural Schools to take up this important line of social evolution.

For a number of years, the long course in Domestic Science has been well attended. It opens a new field of industry and attainment to the girls of our Colorado homes; but there are many who have not the time nor means for so long a term of college life. Many young women on the farm cannot be spared from home duties for more than a few weeks at a time. This is true of many young women in towns and cities. To all these, the State owes a debt it did not hitherto know how to discharge. In the following short course in Domestic Science and Agriculture this want is met. The simple forms of housekeeping and home-making are taught scientifically by women who bring to the subject talent, the highest training and genuine sympathy. The splendid equipment of the College will be at the service of those taking this short course.

The work of the course in practical farming includes much that will be of permanent value to those whose sustenance and happiness depend upon their making the most of the country life. The drudgery and hopelessness of farm life are the fault, for the most part, of farmers themselves. It is the mission of the Agricultural College to make the work of the farmer intelligent and profitable, and the life there the most dignified, worthy and enjoyable to be found in all the world.

Fathers and mothers of Colorado, this College—your College—has no higher aim than to help your sons and daughters attain the high ideals you cherish for them.

The opening date and divisions of this course, terms of admission, etc., are the same as in the Short Course for Young Men.

HORTICULTURE AND BOTANY.

For Course of Study for Freshman and Sophomore years see page 44.

JUNIOR YEAR.

FALL TERM.

Horticulture, 5.	}	P. M.— $\frac{1}{2}$ Horticultural Lab. 10. $\frac{1}{2}$ Chemical Lab., 10.
Chemistry, 5.		
Feeds and Feeding, 4.		
Irrigation and Range Law, 3.		

WINTER TERM.

Horticulture, 5.	}	P. M.—Chemical Lab., 10.
Floriculture, 3.		
Advanced History, 3.		
Chemistry, 5.		
Physiological Botany, 6.		

SPRING TERM.

Entomology, 4.	}	P. M.— $\frac{1}{2}$ Entomological Laboratory, 10. $\frac{1}{2}$ Chemical Lab., 10.
Animal Parasites, 1.		
Advanced History, 3.		
Organic Chemistry, 5.		
Mineralogy and Geology, 4.		

SENIOR YEAR.

FALL TERM.

International Law, 3.	}	P. M.—Chemical Lab., 5. Agronomy, 5.
Agronomy, 5.		
Literature, 5.		
General Bacteriology, 5.		
Chemistry, 5.		
Horticulture, 5.		

WINTER TERM.

Political Economy, 3.
 Chemistry, 5.
 Embryology, 2.
 Evolution, 1.
 Botany, 5.
 Literature, 5.
 Histology, 1.

P. M.—Chemical Lab., 5.
 Embryological Lab., 3.
 Botanical Lab., 5.
 Histology, 4.

SPRING TERM.

U. S. Constitution, 4.
 Chemistry, 5.
 Horticulture, 5.
 Entomology, 5.
 Fiction, 5.
 Botany, 5.
 Geology, 5.

P. M.—Chemical Lab., 5.
 Entomological Lab., 5.

Note—Students in Senior class may elect fifteen hours of work a week as directed by the professor in charge of the department.

A brief outline of the work in Horticulture and Botany is given in the following paragraphs:

HORTICULTURE.

The study of Horticulture is begun in the Sophomore year. The course consists of two terms of required work and three that are elective.

Principles of Plant Culture.—Required in the winter term of the Sophomore year. Includes a discussion of soils, cultivation, fertilization, moisture, heat, cold, etc. The propagation of plants is discussed at length. This includes propagation by seeds, cuttings, layers, buds and cions. The latter part of the term is devoted to a study of the principles of vegetable gardening.

Pomology.—Required in the fall term of the Junior year for agricultural students taking Horticulture. The class-room work consists of a study of orchard soils and their preparation, when to plant, trimming the trees, choice of varieties; cultivation, fertilization, pruning and spraying; harvesting and marketing.

Each of the fruits that are commonly grown in the State is considered more or less in detail as its importance demands.

The latter part of the term is devoted to a study of the principles of crossing, hybridizing and plant breeding.

During one-half of the term the students work two hours each afternoon in the laboratory. Here they are given practice in making cuttings, potting plants, mixing soils and general greenhouse work; budding, grafting, making the various spraying mixtures, etc. Then a study is made of the different fruits that are grown in the State. Fresh specimens are provided for this purpose and a study is made of the trees in the orchards as time permits.

Plant Physiology.—The study of plant physiology as related to the practical operations of horticulture is designed to give the student an understanding of why certain things are done and how the results are attained. The subject is considered from the horticulturist's standpoint; with a knowledge of the minute structure of plants the student is ready to understand how roots, stems and leaves perform their work, and to give a scientific explanation of the various horticultural operations. Elective in the winter term of the Junior year.

Floriculture.—One-half term for women in the winter term of the Junior year.

A brief survey is given of the principles of landscape gardening as applied to home making. The subject of flowers, trees and shrubs suitable for home decoration in Colorado is discussed and hints are given for the best methods of growing them.

Thesis and Literature of Horticulture.—A subject is chosen under the direction of the head of the department which will require original investigation. After the investigation is completed an account of the experiments must be written and be presented as a graduating thesis.

While the work is in progress an opportunity will be given the student to become familiar with the literature of horticulture. Elective in the fall term of the Senior year. Five hours.

Evolution in Cultivated Plants.—A study of the development of plants; the cause of variation in plants and the bearing of the development of plants under cultivation upon the philosophy

of evolution. Elective in the spring term of the Senior year. Five hours.

BOTANY.

Elementary Botany.—Spring term of the second sub-freshman year. For all students who have not had high school Botany. This embraces a study of seeds and seedlings, roots, stems, buds, leaves, flowers and fruit. During the latter part of the term a short time is devoted to the classification of plants.

Anatomy and Morphology.—The work in this course is general and is designed to give the student a general survey of the subject. A study is made first of the lower forms of plant life. Compound microscopes are used when needed.

Required of all agricultural students in the fall term of the Freshman year. Ten hours per week.

Plant Physiology.—A study of the different organs of plants. This is a continuation of the previous term's work. Ten hours per week. For all agricultural students in the winter term of the Sophomore year.

Experimental Physiology.—An elementary study of the life processes of plants. The student performs experiments with simple apparatus which illustrates the function of the different organs and substances of which plants are composed. Six hours. Required of agricultural students in the winter term of the Junior year.

General Bacteriology.—A study of the nature of bacteria and their relation to farm life. Elective for agricultural students in the fall term of the Senior year. Five hours.

Fungi.—The diseases of fruits and farm crops common to the state are given special study. Elective for agricultural students. Winter term, Senior year. Five hours.

Forestry.—The elements of Forestry elective in the spring term of the Senior year for agricultural students. Five hours.

VETERINARY SCIENCE.

COURSE OF STUDY.

For course of study for Freshman and Sophomore years see page 44.

JUNIOR YEAR.

FALL TERM.

Feeds and Feeding, 4.	}	P. M.—Clinics, 5.
Chemistry, 5.		Stock Judging, 10.
Comparative Anatomy, 3.		Chemistry, 10.
Veterinary Medicine, 3.		

WINTER TERM.

Chemistry, 5.	}	P. M.—Chemical Lab., 10.
Materia Medica, 3.		Clinics, 5.
Theory and Practice of Veterinary Medicine, 3.		
Physiological Botany, 6.		

SPRING TERM.

Chemistry, 5.	}	P. M.— $\frac{1}{2}$ Chemical Lab., 10.
Animal Parasites, 1.		$\frac{1}{2}$ Clinics, 10.
Obstetrics, 4.		
Theory and Practice of Veterinary Medicine, 5.		

SENIOR YEAR.

FALL TERM.

Animal Husbandry, 5.	}	P. M.—Dissections, 4.
General Pathology, 5.		Bacteriology, 6.
Bacteriology, 5.		Clinics, 5.

WINTER TERM.

Animal Breeding, 5.	}	P. M.—Histology, 4.
Political Economy, 3.		Clinics, 10.
Therapeutics, 3.		
Evolution, 1.		
Histology, 1.		

SPRING TERM.

Embryology, 2.	}	
Operative Surgery, 5.		
U. S. Constitution, 4.		P. M.—Clinics, 4.
Principles and Practice of Veterinary Surgery, 5.		Embryology, 6.

Veterinary Science has within the last decade assumed a wide and important sphere of usefulness; formerly it implied simply the treatment of domesticated animals for the common accidents and ailments, for reasons wholly pecuniary or humanitarian, and incidentally furnished the most unhampered opportunity for the exercise of superstition and the practice of charlatanism. Now it has come to be recognized as a true science, with importance second to none, as it deals more directly with contagious diseases and their relation to the public health.

The assumption of this new role is coeval with, and the inevitable consequence of, the advent of the germ theory of disease. Micro-organisms which are responsible for our many ills, must be studied in the lower animals as well as in man, for here we find them in the greatest variety and virulency.

It cannot be denied that prophylaxy belongs to the broad field of comparative medicine, and that its two branches, human and veterinary, are inseparable. This bond of inseparable usefulness in the protection of the public health has been sealed by the anti-toxin principles of serum therapy. The immunizing of animals against fatal contagious diseases; the certain detection of latent diseases which cannot be known by physical symptoms, and their early isolation or destruction before they have spread disease germs among their kind, or as in many cases to the human. Also the cure of some diseases and the immense possibilities yet in store by the administration of repeated doses of the attenuated virus; the prevention of disease, which has long been in vogue to a limited extent, by an early administration are phases of the role of Veterinary Science of to-day, and afford us a brief glimpse of its possibilities.

Livestock being one of the principle industries of this State, it is the purpose of Veterinary Science in this institution not only to give a most thorough course of instruction but to stand for everything that can advance this ever-increasing and im-

portant industry. More specifically its province lies in the direction of the handling and treatment of livestock from the standpoint of disease, prophylaxy and treatment.

The curriculum is so arranged that students from the other courses can elect Veterinary Science at the beginning of the Junior year, and those of the course in Agriculture can elect it in part during the Senior year.

Dissections and Clinics.—The well-equipped dissecting rooms, and the free clinics afternoons of every term after the Freshman year, furnish abundant material for practical work. This work is under the immediate supervision of Dr. Glover. The College being situated in an extensive stock-growing district is especially favored in this respect. Not only horses, but all species of animals are brought in for treatment.

Besides this the Colege herd, which every season is being greatly improved and enlarged, is one of the finest in America, and of itself furnishes ample material for classroom demonstration, and requires the constant attention of the Veterinarian.

Operative Surgery.—It is in this line of surgery that the Veterinarian has more to do than in any other.

Operations of every description are performed for the benefit of the class at the hours of free clinics throughout the entire course. The more advanced students are required to perform ordinary operations such as would be found necessary in Veterinary practice.

The subject is also taught by text-book in the Senior year.

General and Special Pathology.—This work is taken up during the Senior year, after a thorough course in Physiology and Histology. The subject is taught by text-book, supplemented by lectures. First the elementary morbid processes generally, macroscopic and microscopic inflammation and its accompanying phenomena, infiltration, resolution, thrombosis, embolism degeneration, atrophy, hypertrophy, necrosis, gangrene, hyperaemia hemorrhage, tumor formations, etc.

Later the study of special pathology is taken into consideration, that is, the diseases peculiar to particular tissues or organs.

Materia Medica.—This is taught throughout the Junior year and in the first term of the Senior by text-book (Finlay Dunn)

with samples of the drugs exhibited to the students, who are required to inspect and handle them until they become intimately acquainted with the leading properties of all the principal drugs.

Obstetrics.—This subject is taken up during the last term of the Senior year, and is taught by two lectures a week. Fleming's **Obstetrics** is used for reference. It includes a review of the reproductive organs, gestation, dystocia, accidents during parturition, obstetric operations, hygiene of pregnant animals, etc.

Anatomy of the Domesticated Animals.—This subject is treated throughout the Junior year by text-books (Chauveau) and supplemented by demonstrations from mounted skeletons, prepared specimens, charts and dissections. During the last term of the Junior year special work in comparative anatomy is given under the direction of Prof. C. P. Gillette.

Therapeutics.—This subject is taught by text-book during the Senior year. It embraces in the case of each particular drug pharmacy, physiological action, therapeutical action, toxic action, antidotes, administration, dosage, antagonists, and incompatibles.

This course is supplemented by prescription writing, which is begun earlier in the course in the study of *Materia Medica*.

ZOOLOGY.

(See page 44 for Course of Study.)

Physiology.—In the winter term of the first Sub-Freshman year physiology is taught for one-half term to all students who can not pass a satisfactory examination in the subject, or present acceptable grades from accredited high schools.

During the fall and winter terms of the Sophomore year, higher physiology is taken by the students in courses in Agriculture, Domestic Science, and Veterinary Science. **Martin's Human Body** will be used as a text book in connection with lectures and demonstrations in the classroom. There will be five recitation periods a week during both terms. Prerequisite, Sub-Freshman's physiology.

For teaching this subject the department is well equipped with human skeletons of infant and adult, articulated and disarticulated, also a papier mache manikin of the entire human body with the organs colored as in life and removable, and enlarged models of special parts as eye, ear, larynx, brain, etc.

Zoology.—This subject is taught to those taking courses in Agriculture, Horticulture, Domestic Science and Veterinary Science, during the fall term of the Sophomore year. There will be five morning periods and five afternoon laboratory periods each week. Much stress is placed upon the laboratory work where the student sees and studies typical forms of the different groups of the animal kingdom, beginning with the lowest and simplest and later taking up those that are higher in structure and development. In order to develop definiteness and accuracy of observation, many carefully labeled outline drawings are required. While form, size and color are matters of more or less interest in themselves, the chief object is always to lead the student to see the relations existing between form and function and between the organism as a whole and its environment.

The department is well provided with microscopes, dissecting instruments, charts and models and has a large collection of invertebrate animals in the College museum.

Entomology.—This subject is taught five times a week during the fall term of the Sophomore year. The aim is to give the students a good general knowledge of the structure, habits and classification of the insect kingdom, and a special knowledge of the habits of the more injurious species and the remedies that may be used to destroy them or prevent their depredations. There will be also five laboratory periods a week of two hours each for one-half of the term. In the laboratory the students will study typical examples of the different orders of insects and will be required to make drawings of important parts. Some time will be devoted to field excursions for the purpose of observing insects under natural conditions. Each student will also be required to make a collection of insects and properly classify and mount them for permanent preservation.

This study is required of students in the Agricultural, Horticultural and Ladies' courses.

In the spring term of the Junior year entomology is again offered five times a week in the morning to those students taking the course in Horticulture. During this term considerable attention will be given to systematic entomology. The large college collection of mounted insects is available for use in this work. Special attention will also be given to insects injurious to fruits.

In the winter term of the Senior year those students who wish to specialize in entomology will be given an opportunity to elect entomology five times a week in the morning.

For this work the College is equipped with every facility for collecting, rearing and mounting specimens. As a collecting ground, Colorado is unexcelled, and there is an insectary and apiary in connection with the department. Also a mounted collection of insects numbering over 50,000 specimens, among them a large number of types, particularly in the orders Hemiptera, Hymenoptera and Orthoptera.

Comparative Anatomy.—During the fall term of the Junior year all students taking the Veterinary course are required to put in three morning periods a week in a comparative study of the skeletons of man and the domestic animals.

Animal Parasites.—One lecture a week in the spring term of the Junior year will be given to students taking the course in

Agriculture or Veterinary Science. The principal parasites, internal and external, attacking domestic animals, will be considered, also the remedial and preventive measures that may be employed against them.

Histology.—During the spring term of the Senior year, histology is required of students in the Agricultural and Veterinary courses. The subject is taught by means of one lecture and two laboratory periods a week throughout the term. So far as possible, the tissues are hardened and sectioned for the student, but he is required to prepare mounts of various tissues for study. The department is provided with compound and dissecting microscopes, microtomes, books of reference, and a large series of permanently prepared microscope slides, showing the tissues of the various organs in vertebrate animals, and other needed equipment for the work.

Embryology.—This subject is taught during the spring term of the Senior year to students in courses in Agriculture and in Veterinary Science. There are two morning lectures and three laboratory periods devoted to the subject each week. Instruction will be given in the general principles of development and inheritance which will be followed with a comparative study of the development of the frog, chick, and man. This subject will be illustrated by wall charts, wax models, and especially prepared microscopic mounts. In the laboratory the student will study the structure of germinal tissue, maturation, fertilization and segmentation of the ovum, and the formation of the germ layers and will watch the development of the eggs of the frog and chick.

Evolution.—The general principles underlying the development of organic beings, the laws of inheritance, and the history of the evolution idea, will be discussed in a series of lectures given once a week during the winter term of the Senior year. Illustrated by the stereopticon. Required by students taking Veterinary, Agriculture and Ladies' courses.

MECHANICAL ENGINEERING.

FRESHMAN YEAR.

FALL TERM.

College Algebra, 5.	}	P. M.—Mechanical Drawing. Shop.
Rhetoric, 5.		
Carpentry and Joinery, 2.		

WINTER TERM.

Trigonometry, 5.	}	P. M.—Shop (Bench Work in Wood).
English Literature, 5.		
Mechanical Drawing (Letter- ing), 2.		
Rhetoric, 3.		

SPRING TERM.

Physics, 5.	}	P. M.— $\frac{1}{2}$ Physical Laboratory. $\frac{1}{2}$ Surveying.
Surveying, 5.		
College Algebra, 5.		

SOPHOMORE YEAR.

FALL TERM.

Mechanics, 5.	}	P. M.—Shop (Forge).
Analytics, 5.		
Machine Drawing, 2.		
Descriptive Geometry, 3.		

WINTER TERM.

Differential Calculus, 5.	}	P. M.—Shop (Wood Turning).
Workshop Appliances, 2.		
Machine Drawing and Design, 5.		
Descriptive Geometry, 3.		

SPRING TERM.

Integral Calculus, 5.	}	P. M.—Shop (Pattern Making).
Special Machines, 5.		
Machine Design, 5.		

JUNIOR YEAR.

FALL TERM.

Principles of Mechanism, 5.	}	P. M.—Chemical Laboratory, 3.
Strength of Materials, 5.		Strength of Materials
Chemistry, 5.		Laboratory, 2.

WINTER TERM.

Chemistry, 5.	}	P. M.—Chemical Laboratory, 5.
Machine Design, 5.		
Steam Boilers, 5.		

SPRING TERM.

Steam Engine, 5.	}	P. M.—Shop (Foundry).
Metallurgy, 3.		
Hydraulics, 5.		
Pumping Machinery, 2.		

SENIOR YEAR.

FALL TERM.

Gas and Oil Engines, 2.	}	P. M.—Shop (Machine Room).
Steam Engine Design, 3.		
Transmission of Power, 3.		
Thermo-Dynos, 5.		
Compressed Air Machinery, 2.		

WINTER TERM.

Thermo-Dynamics, 5.	}	P. M.—Shop (Machine Room).
Heating and Ventilation, 3.		
Railway Mechanical Eng., 2.		
Contracts and Specifications, 1.		
Seminar, 1.		
Steam Engine Design, 3.		

SPRING TERM.

Thesis, 3.	}	P. M.—Engineering Laboratory.
Engineering Design, 2.		
Electrical Machinery, 3.		
Railway Mechanical Engineering, 2.		
Constitution of U. S., 4.		
Seminar, 1.		

General Statement.—This course prepares students for the profession of Mechanical Engineering. It teaches the general principles of engineering and unites theoretical work and practical research. Instruction is imparted by means of text-books, lectures, illustrations, and experiments in testing materials, machines and motors.

As the course in Mechanical Engineering is, in part, designed to enable the student to solve those problems relating to the generation and transmission of power and its application to machines, much of his time is spent in the drawing-room, workshops and experimental laboratory. The studies of this course, which are in common with other courses, are enumerated and described elsewhere in this catalogue; the others are:

Drawing.

Carpentry and Joinery; also wood-working machinery.

Pattern making and foundry work.

Forge work.

Machine and vise work in metals.

Principles of mechanism.

Strength of materials.

Boilers.

The steam engine.

Machine design, machinery and mill work.

Drawing.—Free-hand copy and dictation; free-hand model and object drawing; light and shade; geometric problems, orthographic and isometric projections and projection of shadows, development and intersection of surfaces.

Free-hand drawing gives students facility in representing objects clearly upon paper. Free-hand exercises gradually lead up to making sketches of machines and parts of machines which are afterwards reproduced with instruments in the form of working drawings.

Students are taught how to make careful tracings from their drawings, and from these tracings how to make copies by the blue print process; the black print process is also taught. Considerable copying of machinery from good examples is required; there are in the drafting room for this purpose, working drawings from prominent manufacturers, and from the engineering department of the United States Navy.

The students receive careful instruction in lettering working drawings, so that in addition to being skillfully lettered, they shall be easily read and understood. Much time is spent at the drafting table, in designing machines. In some instances machines are built in the College shops from these designs.

Carpentry and Joinery.—The classroom work, by means of text-books and lectures, takes up the study of the cutting edge of carious wood-working tools and machinery and the means of keeping them in good order; an explanation of the construction of each tool and its manner of acting on the material, the methods of determining how to select materials best suited to different kinds of work; the manner of laying out the work, cutting speed of tools, etc.; the shrinkage and warping of woods and the different modes of sawing into lumber, and the various forms and uses of framing and other joints.

For the purpose of classroom illustration, the Department possesses a good collection of models of the various joints used in timber work in building construction. The strength of various timber joints used in building construction is considered.

Pattern-Making and Foundry Work.—The most advantageous forms of patterns are discussed with regard to the proper distribution of the metal and the best form for moulding in the foundry, the proper construction of core boxes and the various materials from which they may be made. Core mixtures, core-making, baking and finishing, receive careful consideration. The subject of core ovens is considered with reference to their form, construction and management. Various types of cupola furnaces are discussed, methods of lining, introduction of the blast, the placing of tapping and slag holes, different forms of tuyeres.

Forge Work is taught by lectures on iron and steel, and especially with reference to their management in the fire and in the processes of tempering, hardening and annealing.

Machine Work and Vise Work are taught in a similarly thorough and careful manner.

Modern Machine Shop Methods and Appliances.—This subject is taught in the classroom by means of textbooks and lectures. The aim is to familiarize the student with up-to-date methods under various conditions of practice and with such machines and appliances as do not come under his immediate observation in our shops.

Principles of Mechanism are studied with reference to the combinations of which machines are composed, and the study of designs for the communication of motion by means of gears, belts, lings, etc., methods of designing parallel motions, quick return motions and cone pulleys. The adaptation to the formation of gear teeth of the involute, the epicycloid, the logarithmic spiral and other curves, form an important feature in this course.

The Department possesses a large number of models necessary for a presentation of the subject. In many cases they were constructed by the students from their own designs.

Strength of Materials is considered by examining the physical properties of the various materials used in construction.

Besides the usual tests of beams, columns and other structural pieces, tests are made of chains, ropes, cables, solid bars and welded bars of iron; force required to drive various kinds of nails; holding power of nails and screws, and strength of bricks, stones, marble, etc.

Machine Design is taken up for one term, and the students make designs for screws, bolts, nuts, gears, and complete machines, such as arbor presses, drill presses, lathes, engines, etc. In this connection the students make use of classroom notes, reference books, and notes and sketches made by themselves from their experimental work and their reading.

Boilers.—The various forms are carefully studied from the best authors.

The College possesses four steam boilers, to which the students have access, as they also have to many boilers owned by outside parties near the College.

The Department has samples obtained from different sources, of burned and torn sheets from exploded boilers; burned and pitted flues; choked and corroded pipes and fittings, and a large collection of parts of boilers showing conditions incident to boiler management. Injectors, pumps, condensers, feed-water heaters and economizers receive special consideration and are thoroughly investigated.

Chimney draft and mechanical draft are studied and compared with regard to their relative efficiencies.

The Steam Engine is studied in its various forms in general and in detail. The Department has a pair of indicators and all appliances necessary for complete engine tests. Careful atten-

tion is given to the study of valves by means of the Zeuner and Pilgram diagrams. Compound and condensing engines are studied with reference to steam distribution and the proper proportion of the various parts. The thermodynamics of the steam engine is studied in the Senior year.

There are four steam engines at the College which belong to this Department.

The Department also has two first-class steam pumps and an inspirator. These, with what has already been named, form a desirable equipment for the use of the students.

Three of the steam engines are provided with Prony brakes. There has been added a model to be used in studying the steam engine. It shows the working of a common slide valve, a riding valve, and the Corliss valves under varying conditions. It was made for the Department, and enables the students to get a clear conception of the working parts of the steam engine, especially the valve gearing.

Machinery and Mill Work receive attention, methods of arranging shops and machinery are investigated, and the transmission of power for shop purposes is studied. Important engineering developments, as they occur, are discussed in the classroom in connection with the studies to which they relate.

Pumping Machinery.—A study of pumps of different styles and sizes.

Steam Engine Design.—It is the endeavor to have this work conform to the best modern practice, and to supplement the instruction given. Blue prints of drawings furnished by prominent manufacturers are used, and show the prevailing forms of engines in use.

Gas and Oil Engines.—Theory and construction of gas and oil engines, ignitors, governors, etc.

Compressed Air Machinery.—The study of motors, compressors, hoists, and various air tools.

Transmission of Power.—A study is made of the various forms of power transmission in shops and factories.

Thermodynamics.—This includes a study of the laws of thermodynamics as applied to the steam engine.

Heating and Ventilation.—This work includes the study and design of various forms of heating and ventilation in common use in modern buildings.

Railway Mechanical Engineering.—The design and construction of locomotives, the operation of the air brake and the study of different forms of signals and switches.

Specifications and Contracts.—Complete working drawings for some particular problem are made, the specifications are made, and a form of contract for such a problem is carefully worked out.

Constructive Engineering.—The design and arrangement of power plants, shops and factories.

Electrical Machinery.—This work embraces the study of various forms of electrical machinery, the adaptability for different purposes, the arrangement of power plants, light plants and the placing of motors for running single machines.

Metallurgy.—Under this head is taken up the study of combustion, fuels, furnaces and refractory materials. Especial attention is given to the metallurgy of iron and steel.

Seminar.—The Senior students in the Winter and Spring terms use one hour per week for the consideration of articles of interest appearing in the current technical papers and magazines.

Thesis.—Each student is assigned a subject which he is to investigate and upon which he must write a satisfactory thesis. He is expected to rely upon himself as much as possible.

Visits of Inspection.—During the Senior year the students make visits of inspection to the large industrial establishments of the State in charge of an instructor. These visits are intended to be of educational value, and to supplement the work done at the College, and to show the students the practical application of many things taught in the classroom.

Students are expected to read the current technical literature, and for their accommodation the College library is well supplied with the best engineering papers and magazines.

The shops in connection with the Mechanical Engineering Department are places where principles and operations may be more readily laid hold of and permanently acquired, than any bare demonstration of the classroom could accomplish.

The shop instruction is divided into courses, and in each course are given, in connection with the work, an explanation of the construction of each tool and its manner of acting on the

material, the methods of determining how to select materials best suited to different kinds of work, the manner of laying out work, cutting speed of tools, etc.

Course of Labor.

Bench work in wood.....	1 Term
Wood turning	1 Term
Pattern making	1 Term
Moulding and casting.....	1 Term
Iron and steel forging.....	1 Term
Vise work in metals.....	} 2 Terms
Machine work in metals.....	

Bench Work in Wood.—This course consists of exercises with the different wood-working bench tools, so arranged in a graded series as to embrace the manipulation of the tools in their various applications.

First, the use of planes in joining, smoothing and getting the piece out of wind, lining off, and the use of saws in cutting across and with the grain, and keeping to line.

Then follow exercises in making a halved splice, splayed splice, keyed splice, open dovetail mortise and tenon joint, small open dovetail joint, blind dovetail joint, lap joint, dowel joint, newel post and hand-worked rail, panel door, roof truss, box, carpenter's trestle. Instruction is given in making glued joints, inlaid and scraped surfaces.

Students usually work from drawings. Cases, benches, boxes, foundry flasks and a variety of other useful articles are made.

Machine Work in Wood.—In connection with this course, with the use of tools, is given the most rapid and economical method of selecting and preparing the wood for the machine. There are given examples of straight turning; cutting in and squaring off; concave, convex and compound curves; handles for chisels and other tools, and examples in chuck work in separate and combined pieces.

This work is so planned that much of it, when completed, forms some part of a machine or other product. A five-horse power vertical steam engine complete in all its details, a number of drafting tables, boring bars, gears, vises, bells and small tools for use in the shop, serve to illustrate the practical use to which shop products are put.

Pattern-Making and Foundry Work.—After becoming familiar with bench and machine work in wood, an application of both is made by constructing patterns with due regard to shrinkage, draft and the best method of constructing the pattern so that it causes the least amount of trouble in the foundry. There are given examples of plain work; core work; pulley work; pipe work; gear work; core boxes, their use and construction.

After the patterns and core boxes have been constructed, they are taken to the foundry-room by the students, where moulds and cores are made and castings are made in iron, brass, bronze and aluminum.

In the foundry, the students are taught how to charge and manage the cupola, each student pouring for himself the hot metal for the molds he has made.

The management of the brass furnace and core oven is also taught.

Castings of iron, brass and other metals and alloys are made for vises, drafting tables, dynamos, steam engines, engine lathes and other things needed.

Forge Work.—Students are carried through a series of carefully graded exercise in both iron and steel, working from drawings in each instance. Many pieces are made which are put to a practical use. Lathe, planer and shaper tools are made by the students in this room; also cold chisels, center punches, smith tools, brass furnace crucible tongs, skimmers and all bolts, braces and such other iron and steel work as may be needed.

Machine Work in Metal.—The care and management of tools and their construction are taught.

Cutting speed of tools and proper angle of cutting edge for different purposes and different metals; centering and straightening work; straight turning and squaring; boring; making and fitting joints; chuck work; screw cutting, inside and outside; drilling, tapping and reaming; boring with boring bar and use of center rest; polishing and finishing; hand-tool work. Every shop exercise is graded and marked in the same manner as a classroom recitation, each piece of work being regarded as of educational value.

Practical Mechanics.—For those whose time and means are limited, a short course in practical mechanics is provided. This

course covers practically the work of the Freshman and Sophomore classes.

The work has for its object a systematic and progressive education in the use of tools and materials, combined with as much theoretical knowledge as may be deemed necessary to explain the principles involved. It does not teach special trades or manufacture salable articles; to do so would require that the student be kept on the kind of work that he could do best, and thus prevent him from acquiring broad and liberal ideas of other methods. So, without teaching any complete trade, the mechanical principles of many are gained. This does not necessarily mean that the student becomes sufficiently expert to compete with the skilled mechanic, but that a knowledge of how a tool or machine should be used, and the manner of laying out work for it, are thoroughly taught.

Should circumstances be such as to cause the student to enter manufacturing, his ideas have been broadened by his training, and he will more readily grasp anything new that may come up in his business, or, should he take up farming, he will with greater ease be able to understand the mechanical principles and workings of his machinery, and know how to keep it and his buildings in proper repair.

Tool-Room System.—There is a well-arranged tool-room, fitted up with a check system designed to accustom students to order and neatness and the names of the tools in use.

Theory and Practice.—Attention is called to the combination of the theoretical and practical instruction here offered. Thorough and careful instruction is given with, or is supplemented by, the most practical application of the same in all ways. In every instance where it is possible the work of the classroom is supplemented by work in a corresponding laboratory, where the experimental work is performed according to the latest and most approved methods with the best machines and materials. The practical applications of mechanical theories broaden the conceptions of these truths and make them easier to grasp and more easily retained; by studying the construction of machines the abstract mathematical laws are better understood and their significance becomes more evident.

CIVIL AND IRRIGATION ENGINEERING.

FRESHMAN YEAR.

FALL TERM.

College Algebra, 5.	}	P. M.— $\frac{1}{2}$ Mechanical Draw- ing. $\frac{1}{2}$ Shop.
Rhetoric, 5.		
Carpentry and Joinery, 2.		
Drawing, 3.		

WINTER TERM.

Trigonometry, 5.	}	P. M.—Shop.
English Literature, 5.		
Lettering, 2.		
Rhetoric, 3.		

SPRING TERM.

Physics, 5.	}	P. M.— $\frac{1}{2}$ Physical Labora- tory. $\frac{1}{2}$ Surveying.
Surveying, 5.		
College Algebra, 5.		

SOPHOMORE YEAR.

FALL TERM.

Field Camp, 2 weeks.	}	P. M.—Surveying.
Mechanics, 5.		
Analytics, 5.		
Higher Surveying, 5.		
Photography, 1.		

WINTER TERM.

Differential Calculus, 5.	}	P. M.—Draughting.
Mechanics, 5.		
Railroad Engineering, 5.		

SPRING TERM.

Integral Calculus, 5.	}	P. M.—Field Work.
Agricultural Hydraulics, 5.		
Irrigation Engineering, 5.		
Seminar, 1.		

JUNIOR YEAR.

FALL TERM.

Field Camp, 2 weeks.	}	P. M.—Chemical Laboratory, 3. Field Work, 2.
Strength of Materials, 5.		
Chemistry, 5.		
Irrigation Development and Laws, 5.		
Seminar, 1.		

WINTER TERM.

Chemistry, 5.	}	P. M.—Chemical Laboratory.
$\frac{1}{2}$ Materials, of Engineering, 5.		
$\frac{1}{2}$ Trusses and Bridges, 5.		
$\frac{1}{2}$ Meteorology, 5.		
$\frac{1}{2}$ Canal Management, 5.		
Seminar, 1.		

SPRING TERM.

Hydraulics, 5.	}	P. M.—Field Work.
Trusses and Bridges, 5.		
Geology, 5.		
Seminar, 1.		

SENIOR YEAR.

FALL TERM.

Field Camp, 2 weeks.	}	P. M.—Electrical Laboratory.
Hydraulics, 5.		
Logic, 3.		
Electricity, 5.		
Mineralogy, 2.		
Seminar, 1.		

WINTER TERM.

Civil Engineering, 5.	}	P. M.—Design.
Engineering Design, 5.		
Political Economy, 3.		
Specifications and Contracts, 2.		
Seminar, 1.		

SPRING TERM.

Thesis, 5.	}	P. M.—Engineering.
Civil Engineering, 5.		
Seminar, 1.		
Constitution of the U. S., 4.		

This course is designed to give the students a good foundation, both theoretical and practical, in civil engineering.

As one of the opportunities for usefulness in Colorado and other western states is along the lines of irrigation, special attention is paid to hydraulics and to the problems of irrigation.

The Colorado Agricultural College was the first to offer a course in irrigation engineering. The present course is designed to give its graduates the inclination and knowledge necessary to take an active part in irrigation engineering and management.

Especial stress is laid upon field work. Every student who completes the course is intended to have a working knowledge based on long and varied practice with all the ordinary instruments of surveying. In addition to the field practice through the college year, the whole class is taken into the mountains and the whole time given to field practice under actual conditions. In such exercises classes have run lines of levels and transit lines to the top of Long's Peak, an elevation of 14,275 feet. The members of the classes are required to check their work within limits of the most careful work.

The students are also exercised in the use of current meters in measuring water, gauging canals so that they may be prepared to settle some of the vexing problems connected with irrigation.

The College is well supplied with instruments, having six current meters, eight compasses, eight levels, eight transits, sextants, plane tables, barometers, planimeters, comptometers,

and odometers, with necessary chains, tapes, rods, etc., for field practice.

The department also has a camping outfit for use in the field.

Mathematics.—In Mathematics the students when entering the Freshman class, are expected to be prepared in geometry and in algebra to quadratics. Two additional terms are devoted to algebra, one to trigonometry, with a view to practice in its application and in computations. Analytical geometry and differential calculus are completed in the Sophomore year, thus laying a foundation for the mechanics of materials, hydraulics, and other technical studies of the subsequent years.

Drawing.—Orthographic projection, shades, shadows and lettering are taken up in the Freshman and Sophomore years. In connection with field work, designing plats, plans and working drawings, giving considerable practice in draughting, are required.

Chemistry.—Two terms in which chemistry, including general chemistry and elements of inorganic chemistry with laboratory work in blow pipe analysis and qualitative practice are required in the Junior year.

Physics.—A preliminary high school course in physics is pre-supposed. This is continued by a term in the Freshman year given to heat and electricity. Two terms in the Sophomore year are given to mechanics. Later in the course two terms which may be considered as a part of the study of physics are given to hydraulics, and a term in the Senior year is given to applications of electricity.

Surveying.—In the Freshman year land surveying and leveling, and the use of the compass and level as instruments of surveying are taught. The elements of city surveying, topographic, geodetic and hydrographic surveying with theory of instruments used are included in the study of higher surveying in the Senior year. Abundant field practice in the neighborhood surrounding the College gives varied opportunities for field work.

Field Work.—Six weeks are required in practice in the Freshman year. This is supplemented by much other required work of the Sophomore, Junior and Senior years. An important feature of the field work is the practice camp. This is begun

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one week prior to the opening of the Fall term, and extends through the first week of the Fall term, described more at length later.

Geology.—Stratigraphical geology and physiography is enforced by the abundant object lessons in the vicinity.

Mineralogy.—This is confined more especially to the study of rocks as adapted to engineering construction.

Trusses and Bridges.—The theoretical study of the distribution of trusses in bridges and the methods of calculating them, both numerically and graphically. Much time is given to the actual solution of problems. The study is aided by working drawings and examples of such structures.

Strength of Materials.—The first term of this study is more especially given to the mechanics of materials, followed later by a study of the materials of engineering, as brick, stone, concrete, soil, etc., their peculiarities and advantages. The department has a testing machine of 50,000 pounds capacity, and also a cement testing machine of 1,000 pounds testing capacity, to use in laboratory practice.

Hydraulics.—The study of hydraulics from the theoretical side takes one term. This extends to the laws of gravity as affecting water, principles governing measurements through orifices, over weirs, channels, etc., the loss of head through pipes, etc. Special stress is given to those operations which have application to the measurements and methods applicable in irrigation.

Agricultural Hydraulics.—In this course the relation of water to the growth of plants as a basis for intelligent irrigation, is considered. The amount of water used by plants; the most favorable amount of moisture in the soil, and the best depths of moisture, and other conditions favorable to plant growth. The methods and philosophy of irrigation are discussed at length. In another term subsequently, time is given to theoretical hydraulics and experimental investigation. In addition to the current meters, apparatus, and other equipment in this line belonging to the College, the canals and reservoirs on a large scale in the vicinity afford a means of measurement to an extent which no academic equipment could furnish. The College pipe line which brings water from a spring four miles distant, was equipped with a piezometer connections at short inter-

vals during construction so that it is an accessory to our hydraulic apparatus as a means of testing friction in pipes. We also have a siphon sixteen inches in diameter and 1,000 feet long and a pipe twelve inches in diameter, several thousand feet in length, also adapted for study of this character. The hydraulic laboratory also has an equipment of scales, weirs, etc., but the most valuable equipment for the work is found in connection with the neighboring canals. The hydraulic investigations of the corresponding section of the Experiment Station in the different parts of the State also furnish a large amount of data from actual investigation for the use of the more advanced students who are sometimes given an opportunity to take part in these investigations.

Railroad Engineering.—A term in the Sophomore year is given to the question of tunneling and earthwork, trestling, railroad location and the engineering problems of railroads.

Meteorology.—A short course in which it is intended to give methods of observation of meteorological phenomena, a knowledge of the laws of storms, both general and local, and their changes, is taken up in the Winter term of the Junior year.

IRRIGATION.

Besides the instruction in hydraulics, all of which is of practical import to the engineer or to the agriculturist in Colorado, several terms are devoted to the study of the various phases of the irrigation question. In the Winter term of the Sophomore year the study of Irrigation engineering is taken up. The construction of flumes, location and construction of canals, head-gates and other structures are considered. In the Junior year a term is given to the consideration of the development of irrigation, and to the laws of irrigation. This is considered, but with the development of the idea that the present condition of irrigation institutions is an evolution from conditions of different communities, in that our laws have been made to meet the conditions as they have arisen.

Canal Management.—In this course it is intended to discuss the problems that arise with canal superintendents and water commissioners whose duties lie in connection with the distribution of water, hence more especial attention is given to problems that concern such officials. Both of these courses are intended to give the student an intelligent knowledge of the prob-

lems of such duties as qualify technically for taking part in administration in the distribution of water, when acting as water commissioners or canal superintendents. In order to derive the greatest benefit, these two courses should be taken in connection with the study of hydraulics as included in the other courses.

In the course called Civil Engineering, in two terms of the Senior year, it is intended to include some of the other branches necessary for engineering not included in previous courses. A fuller discussion of road engineering and road making, of city engineering, including construction of city water works, and of other general problems of engineering, will be entered into in this course. In the Winter term of the Senior year considerable time is given to engineering design. It is intended in this course that practical problems of designing and laying out of canals and reservoirs, plans and estimates for flumes, headgates and other constructions shall be worked out. The problems given to students will vary from year to year. Other things being equal, preference will be shown for those problems the solution of which will be of immediate benefit. The intention, however, is to require the students to design and make estimates complete for some particular engineering construction, whether water works, canals, or dams, with the belief that the complete solution of such problems will develop the power of the student to manage other similar problems.

The study of Specifications and Contracts, in the Senior year, will take up the essential principles of law involved in contracts. There will be discussion on the characteristics of written and implied contracts. The forms of contracts and the general conditions necessary for correct interpretation will also be considered.

The seminar of the last few years of the course will for a portion of the time include more than is ordinarily included in such terms. In the Sophomore and occasionally in the later years, some time will be given to technical literature. The articles in current periodicals will be read and reported upon by the different members of the class and a general discussion will ensue. As they become more advanced in their course more time will be given to discussions of various engineering questions and to the examination of different problems.

Photography.—The ability to use the camera is one of the essential elements in the knowledge of engineering, and a very desirable means of making a record of any kind of work. Each student will be given an opportunity to use the camera and will be given sufficient instruction to understand the principles of photography.

Field Camp.—Each student in the Engineering course reports on Friday, ten days before the opening of the Fall term, for field practice. The benefits of such work have been so marked that this exercise is considered as an essential part of the course and is required of such students after the first year.

In order to remove distracting surroundings as well as to include excellent field opportunities, the classes go far into the mountains. The encampment lasts for two weeks, and is in charge of the Professor of Engineering and competent assistants. For the past two years Estes Park and the vicinity of Long's Peak was selected as affording a variety of topographical conditions; from comparative plains to some of the roughest regions of the Rocky Mountains; with streams and abundant choice for both easy and difficult problems of field work. An additional reason for choice has been that notwithstanding the wildness of the country, the party has been within easy reach of daily mail, telephone, store and physician. Camps were formed at elevations of from 7,500 to 12,000 feet above sea level. Level and transit lines were run to the top of Long's Peak at an elevation of 14,275 feet. While there has been hard work, such is to be expected and is welcomed by every earnest student. The trips have also been the source of much pleasure. The students returned in vigorous physical condition, prepared for the remainder of the college year. The College supplies part of the permanent equipment. Each student furnishes his bedding and personal needs. The party divides in the expense of transportation, cook and provisions pro rata. The cost has been about \$5.00 each per week, or about the same as would be the cost in town, excluding equipment.

In the Senior year each student candidate for graduation will be expected to prepare a thesis containing the results of some original investigation on some question pertaining to engineering or irrigation.

ELECTRICAL ENGINEERING.

FRESHMAN YEAR.

FALL TERM.

College Algebra, 5.	}	P. M.— $\frac{1}{2}$ Mechanical Draw-
Rhetoric, 5.		ing, 10.
Carpentry and Joinery, 2.		$\frac{1}{2}$ Shop (Wood
Drawing, 3.		, Room) 10.

WINTER TERM.

Trigonometry, 5.	}	P. M.—Shop (Wood Room),
English Literature, 5.		10.
Mechanical Drawing, 2.		
Rhetoric, 3.		

SPRING TERM.

Physics, 5.	}	P. M.— $\frac{1}{2}$ Physical Labora-
Surveying, 5.		tory, 10.
College Algebra, 5		$\frac{1}{2}$ Surveying, 10.

SOPHOMORE YEAR.

FALL TERM.

Mechanics, 5.	}	P. M.—Shop (Forge), 10.
Analytics, 5.		
Drawing, 2.		
Descriptive Geometry, 3.		

WINTER TERM.

Differential Calculus, 5.	}	P. M.—Shop (Machine
Elements of Electrical Engineer-		Room), 10.
ing, 5.		
Descriptive Geometry, 3.		
Drawing, 2.		

SPRING TERM.

Integral Calculus, 5.	}	P. M.—Shop (Machine
Elements of Electrical Engineer-		Room), 10.
ing, 5.		
Drawing, 5.		

Note.—Freshmen entering from accredited high schools, not having had German or French, may substitute Latin for rhetoric and literature and elect German or French.

JUNIOR YEAR.

FALL TERM.

Principles of Mechanism, 5.	}	P. M.—Chemical Laboratory, 6.
Strength of Materials, 5.		Strength of Materials, 4.
Chemistry, 5.		

WINTER TERM.

Chemistry, 5.	}	P. M.—Chemical Laboratory, 10.
Drawing, 3.		
Dynamo-Electric Machinery, 2.		
Steam Boilers, 5.		

SPRING TERM.

Steam Engine, 5.	}	P. M.—E. E. Laboratory, 4.
Dynamo-Electric Machinery, 5.		Electric Design, 6.
Telephony and Telegraphy, 5.		

SENIOR YEAR.

FALL TERM.

Electric Light, Power and Distribution, 5.	}	P. M.—E. E. Laboratory, 6.
Steam Engine Design, 3.		Electric Design, 4.
Thermo-Dynamics, 5.		
Alternators and Transformers, 2.		

WINTER TERM.

Thermo-Dynamics, 5.	}	P. M.—E. E. Laboratory, 6.
Alternators and Transformers, 3.		Electric Design, 4.
Electric Railways, 3.		
Seminar, 1.		
Engine Design, 3.		

SPRING TERM.

Thesis, 5.	}	P. M.—M. E. Laboratory, 4.
Constitutional History, 4.		E. E. Laboratory, 6.
Seminar, 1.		
Electrical Engineering, 5.		
Electrical Machinery, 3.*		

*For Seniors of Mechanical Engineering Course.

This course is designed for those who wish to prepare themselves for the profession of Electrical Engineering. It is imperative that the practical engineer should be familiar with the principles of machinery and methods of Machine Construction. For this reason this course contains much that belongs to the Mechanical Engineering Course. The extensive application of electricity to the various industries requires that a course in Electrical Engineering furnish the most thorough instruction in the principles of electricity and magnetism. This instruction is given by means of text-books, lectures and laboratory work.

The department is well equipped with apparatus by means of which electricity and magnetism can be studied experimentally.

Lectures, from time to time, by prominent engineers, and inspection trips to representative power and lighting plants will constitute an important feature of the Department's work.

The studies included in this course, but which are common to other courses, are described in their appropriate places elsewhere in this catalogue. The course of instruction belonging to this Department alone is as follows:

Elements of Electrical Engineering.—General principles and laws of electricity and magnetism, measurements of electric and magnetic quantities, application of these principles, elementary study of the dynamo-electric machine.

Five hours a week during the winter and spring terms, Sophomore year.

Dynamo-Electric Machinery.—The principles, design, construction and operation of dynamos and motors.

Two hours a week during the Winter term, five hours a week during the Spring term, Junior year.

Telephony and Telegraphy.—Methods and instruments employed in telephony, telegraphy and electric signaling. Design and installation of central telephone exchanges, multiplex and wireless systems of telegraphy.

Five hours a week during the Spring term, Junior year.

Electric Light, Power and Distribution.—The design, installation and operation of the various systems of electric lighting. The plant, transmission line, sub-stations, distribution, wiring, etc., are considered.

The utilization of electric energy in machine shops and factory. The best type of motor for any given condition. The different methods of motor drive.

Principles and methods by which transmission and distribution of direct and alternating currents are affected. Voltage and current regulation, etc.

Five hours a week during the fall and spring terms, Senior year.

Alternators and Transformers.—The principles and design of alternating current machinery and transformers. Types of transformers, rotary converters, double current generators, insulation, etc.

Two hours a week during the Fall term and three hours a week during the Winter term, Senior year.

Electric Railways.—Design, installation and operation of electric railways, including surface, elevated and underground systems, urban and interurban systems.

Three hours a week during the Winter term, Senior year.

Electrical Engineering.—A general consideration of electrical engineering as a whole, including the following and kindred subjects: Steam and hydraulic power and lighting plants, high-tension transmission lines and appliances and the use of the electric current in the various arts and industries.

Five hours a week during the spring term, Senior year.

Seminar.—Reading and discussion of electrical technical journals, institute papers, and other Electrical Engineering literature.

One hour a week during the Winter and Spring terms, Senior year.

Electric Design.—Design of electrical apparatus, dynamos and motors with full working drawings and calculations.

Six hours a week during the Spring term, Junior year, and four hours a week during the Fall and Winter terms, Senior year.

Electrical Engineering Laboratory.—Measurement of resistance, current, voltage, insulation, capacity, etc. Determination of efficiency of dynamos and motors. Plotting characteristic and hysteresis curves. Experiments with alternating currents, transformers and measuring apparatus.

Experiments with polyphase currents and construction of diagrams, etc.

Four hours a week during the Spring term, Junior year.
Six hours a week during the Fall, Winter and Spring terms, Senior year.

Thesis.—On the completion of the prescribed course in Electrical Engineering, candidates for a degree must submit a satisfactory thesis on some approved electrical subject. The thesis may be an experimental investigation, or a design of some electric machine, or distribution or power system.

CHEMISTRY AND GEOLOGY.

Chemistry.—The prescribed course of study in this subject is taken by the students of all courses. It has been planned to include no more of the science than is advisable for a collegiate course, the object being to present the principles of the science and such facts as are necessary for a reasonably thorough understanding of these principles.

The means employed in giving instruction are recitations, lectures and laboratory practice. Our aim is to give the student the benefit of the discipline of the recitation system, the illustration of the lecture and the inductive system of the laboratory. The object aimed at is wholly educational and is included in an acquaintance with the scope and character of the science, the necessity of a clear perception of facts and an exact statement of the same; also the importance of neatness and exactness. The latter are obtained by requiring all experiments to be done quantitatively, first requiring the student to calculate the result which should be obtained, and testing his work by the agreement of the actual results with the calculated one.

Laboratory practice is not begun until the student has received sufficient instruction in stoichiometric calculation, and the general properties of acids, bases and salts, to make him fully comprehend the simple problems given in illustration of the general principles of Chemistry.

The instruction during the first term covers the general principles of Chemistry and the Chemistry of the not-metals. The Chemistry of the metals is given by lectures. Organic Chemistry is taken up during the second term and the fatty compounds completed.

Agricultural Chemistry is taught by lectures and the textbook. Johnston's *Agricultural Chemistry*, edited by Professor Aikman, being used as a text. The lectures embrace, particularly, soil chemistry, manures and fodders.

The laboratory practice is the same for students of all courses up to the completion of the qualitative analysis; from

this point on the work is adapted to the objects the student has in view and to his proficiency. While the student's wishes are considered, the selection of the work is made by the professor in charge.

No instruction is given in assaying, as this line of work lies without our province and is provided for by other State institutions.

The laboratory is well lighted, heated and ventilated; it is supplied with all that is necessary for a very extended course in qualitative and quantitative analysis. For fuller description, see Buildings and Equipment.

Geology.—Two terms of the Junior year, the Winter and Spring, are devoted to this study. The relation of Geology to the soil is more fully discussed in the Spring term of the Senior year in connection with Agricultural Chemistry. Elementary Geology is taken up in the Winter term of the Junior year and systematic Geology in the Spring term.

The illustrative material at our command is fuller than usual and of most excellent grade. Of lithological material, we have about nine hundred specimens of good cabinet size, $3 \times 4\frac{1}{2}$ inches, representing all the important classes of rocks and many of the varieties. This collection of rocks is supplemented by a good working collection of the most important rock-forming minerals, and a small collection of sections serving to show the microscopic structure of the various classes of rocks and the optical properties of their component minerals. Economic Geology is represented by collections of ores, of which those of iron, lead and silver and copper are representative, and further by a large collection of ornamental materials, marbles, serpentines and porphyries. This collection consists of polished specimens. Many of them are large and all of them choice, making a very beautiful and attractive collection. Historical Geology is represented by a collection of seven hundred and fifty fossils and forty casts. These fossils illustrate the life of every geological age and period. Those of the Mesozoic and Cenozoic are, for the greater part, foreign, while those of the Paleozoic are mostly from American localities.

DEPARTMENT OF GENERAL AND DOMESTIC SCIENCE.

COURSE OF STUDY.

FRESHMAN YEAR.

FALL TERM.

College Algebra, 5.	}	P. M.— $\frac{1}{2}$ Pattern Drafting
Rhetoric, 5.		and Plain Sewing, 10.
German, 5, P. M.		$\frac{1}{2}$ Canning and Pre-
		serving, 10.
		Botany Lab., 10.

WINTER TERM.

Trigonometry, 5.	}	P. M.— $\frac{1}{2}$ Millinery and Em-
English Literature, 5.		broidery.
Rhetoric, 2.		$\frac{1}{2}$ English Consulta-
Themes, 3.		tion.

SPRING TERM.

Physics, 5.	}	P. M.—Physical Lab., 10.
German, 5.		
Household Hygiene or College		
Algebra, 5.		

SOPHOMORE YEAR.

FALL TERM.

Zoology, 5.	}	P. M.—Zoological Lab., 10.
Discussions or Analytics, 5.		
Physiology, 5.		

WINTER TERM.

Business Correspondence, 5.	}	P. M.—Dressmaking, 10.
Astronomy or Calculus or Hor-		
ticulture, 5.		
Physiology, 5.		

SPRING TERM.

Mediaeval Institutions, 2.	}	P. M.— $\frac{1}{2}$ Entomological Laboratory, 10.
Themes, 3; History of Education, 2, or		
Calculus, 5.		
English History, 3.		
Entomology, 5.		

JUNIOR YEAR.

FALL TERM.

Drama, 5, or	}	P. M.— $\frac{1}{2}$ Horticultural Laboratory, 10.
Philosophy of Homemaking, 5.		
Horticulture, 5		$\frac{1}{2}$ Chemical Lab., 10.
Chemistry, 5.		

WINTER TERM.

Floriculture, 5.	}	P. M.—Chemical Lab., 10.
Chemistry of Cooking, 5.		
Advanced History, 3.		
Artistic Pattern Drafting, 2.		
Chemistry, 5.		

SPRING TERM.

Organic Chemistry, 5.	}	P. M.— $\frac{1}{2}$ Chemical Lab., 10. $\frac{1}{2}$ Art Needle Work, 10
Home Nursing, 4.		
Psychology, 3.		
Advanced History, 3.		
Mineralogy and Geology, 4.		

SENIOR YEAR.

FALL TERM.

Logic or International Law, 3.	}	P. M.—Sewing, 4. Bacteriological Lab., 6.
Literature, 5.		
Bacteriology, 5.		
Sociology, 3.		
Thesis.		

WINTER TERM.

Political Economy, 3.	}	P. M.— $\frac{1}{2}$ Cookery, 10. $\frac{1}{2}$ Sewing, 10.
Literature, 4.		
Evolution, 1.		
Science of Nutrition, 4.		
Psychology, 3.		
Thesis.		

SPRING TERM.

Artistic Pattern Drafting, 3.	}	P. M.—Advanced Needle Work, 10. Special Lectures.
Fiction, 5.		
Ethics, 3.		
Constitution of the U. S., 4.		
Thesis.		

The establishment of the Department of Domestic Science in the Colorado Agricultural College was the outgrowth of the conviction that the education of a young woman is no more complete without training in the domestic arts and underlying sciences than is the education of a young man without training in the practical arts of life.

Knowledge is an excellent thing; but knowledge and the acquired skill to apply that knowledge are infinitely better. To know what to do is important; to know the same thing, and in addition to have skill in doing it, is reaching out and taking hold of the best.

Thus committed to the doctrine that true education should include, and in fact does include, culture of the moral and mental powers in connection with the practical training in the industrial arts, the State Board of Agriculture illustrated its theory in the founding of this Department in June, 1894.

The following fall witnessed the opening of the old Horticultural building under a new name with a purpose of making this feature a great success.

The appreciation of this work is manifest in the fact that since its introduction the number of young ladies in the College has more than doubled. Since the majority of young ladies will be homemakers, this subject is of paramount importance. Through this training that which seemed drudgery is transformed into an attractive, elevating and very useful art.

The course includes lectures and classroom recitations, found in the following subjects:

I. Hygiene and Sanitation.—This subject is taken up at the beginning of the Spring term of the Freshman year.

Text-books used are Pruden's "Dust and Its Dangers" and "Ice and Water Supplies," also a collection of Public Health essays relating chiefly to the home and school, and classified as follows:

1. Study of Home.
 - (a) Selection of Location.
 - (b) The building of the home, from foundation to attic, including materials used, the plumbing, heating, lighting, ventilation, etc.
 - (c) The surroundings; lawns, trees and shrubbery; emphasizing sanitary and hygienic conditions.
 - (d) Furnishing the home for the purposes of convenience, adornment and the happiness of the inmates.
2. The use of Disinfectants.
3. Individual Prophylaxis Against Disease.
4. School Hygiene.
5. Foods.
6. Preventable Causes of Disease.

II. **Emergencies, Conversation, Etc.**—During the fall term of the Sophomore year the leading aim is to teach self-reliance, presence of mind, an interest in general subjects, and to train the student to express herself concisely, intelligently and entertainingly.

The scheme is varied for each day in the week. Tuesdays are devoted to emergencies. To illustrate: One subject taken is the resuscitation of the apparently drowned. While in all cases of accident, a physician should be called, the attendant may be of great use while the physician is coming. On Wednesdays the subjects always relate to the human organism. For instance, the skin is studied under the divisions of functions and care. Thursdays each young woman is required to prepare for the class an item of interest that belongs to the general subject of Home Science. The lesson for Friday morning is one of great importance. Some subject for discussion is announced one week in advance, with a member of the class as leader. For twenty minutes the one in charge presides; then the instructor takes the chair and recapitulates, adding and modifying wherever necessary.

Since the art of conversation has been very much neglected in recent years, the young women appreciate this opportunity of giving special attention to so valuable and cultivating a subject, particularly since it is absolutely indispensable in the well-ordered home.

III. Chemistry of Cooking and Cleaning.—In the winter term of the Junior year the subject considered is the Chemistry of Cooking and Cleaning. The practice of cooking can not be carried on successfully without some knowledge of chemical science. The text-book used is the work of Mrs. Ellen H. Richards. The work of this term tends to lift the veil of mystery from many kinds of housework, and to fill the mind of the student with a broader conception of her sphere as a homemaker. Moreover, the actual performance of the labor is materially lessened when these subjects are properly understood.

IV. Home Nursing.—At the opening of the Spring term, Junior year, Week's Text-Book on Nursing is placed in the hands of the class, and as thorough investigations and study as possible without clinical practice is carried forward. In all of these lines attention is given to the subject of micro-organisms, as the knowledge of them and their functions is variously related to the matters under consideration.

V. The Philosophy of Home Making.—This study has been added to the course recently and is designed to treat the whole province of the home from a philosophical standpoint. Fall term, Junior year.

VI. Science of Nutrition.—During the winter term of the Senior year the Science of Nutrition is studied with Atwater's **Chemistry and Economy of Food**. Bulletin No. 21, of the Office of Experiment Stations, Washington, D. C., is taken as the basis. Much supplementary reading is required and the study of dietaries is made an important feature of this division.

VII. Studies in Hygienic and Artistic Pattern Drafting.—The human form is to be studied with health, beauty and utility in view, in the making of patterns and clothing.

VIII. Lectures.—These are given by specialists and are of great importance to young women in organizing and conducting their own homes. Spring term, Senior year.

Sewing.—The afternoon work in sewing consists of drafting patterns, cutting out garments, plain sewing, plain and fancy stitches, embroidery and millinery. Everything is done systematically and methodically, and not for a moment is sight lost of the high educational value of this training. Special instruc

tion is given in dressmaking. Notwithstanding the fact that no student is required to purchase material for sewing, it is invariably done, because in so doing she is entitled to the product of her labor.

The Kitchen.—The work in the kitchen laboratory includes the study of foods, with practice in all kinds of cooking and laundering. How to serve food; the care of the table linen; the arrangement of dining tables for all occasions, and how to make the various kinds of food serve their best purposes at the least cost, are among the subjects considered.

Housekeeping.—Since the building in which Domestic Science is taught is furnished, as far as possible, as a home would be, actual work in housekeeping is carried on. Sweeping, washing of wood and glass, as well as dusting, form a part of each student's duties.

General Topics.—A lecture is given on each Monday afternoon on some topic relating to the care of the house, clothing, or person; social duties; customs, customs of good society and anything that will aid in the development of a perfect womanhood.

Thesis.—The subject for thesis must be chosen after consultation with the head of the department selected by the student, not later than October 15th, of the Senior year. The thesis must record the result of original investigation of some subject, and must be approved by the head of the department directing such work, and filed with the Secretary of the Faculty not later than May 15th, of the Senior year.

NORMAL COURSE IN DOMESTIC SCIENCE

(TWO YEARS.)

JUNIOR YEAR.

FALL TERM.

Rhetoric, 5.
Chemistry, 5
Discussions, 5.

P. M.— $\frac{1}{2}$ Canning and Preserving, 10.
 $\frac{1}{2}$ Pattern Drafting and Plain Sewing, 10.
3-5 Chemical Lab.

WINTER TERM.

Rhetoric, 5.
Chemistry, 5.
Business Correspondence or English Literature, 5.
Thesis.

P. M.—Chemical Lab., 10.

SPRING TERM.

Methods, 2.
Thermics, 3.
Household Hygiene, 5.
History of Education, 2.

P. M.— $\frac{1}{2}$ Needlework.
 $\frac{1}{2}$ Normal Work.

SENIOR YEAR.

FALL TERM.

Bacteriology, 5.
 $\frac{1}{2}$ Philosophy of Home Making, 5.
 $\frac{1}{2}$ Dietetics, 3; Laundry, 2.
Physiology, 5.

P. M.— $\frac{1}{2}$ Dressmaking, 10.
 $\frac{1}{2}$ Bacteriological Laboratory, 10.

WINTER TERM.

Science of Nutrition, 4.
Chemistry of Cooking, 2.
Advanced History, 3.
Physiology, 5.
Thesis.

P. M.— $\frac{1}{2}$ Cooking, 10.
 $\frac{1}{2}$ Millinery and Embroidery, 10.

SPRING TERM.

Fiction, 5.	}	P. M.—Special Lectures.
Home Nursing, 4.		½ Advanced Needle-
Pattern Drafting, 3.		work.
Ethics, 3.		½ Dressmaking.

Prerequisites for the Normal Course are identical with the requirements for admission to the Collegiate courses.

Since the establishment of the Domestic Science Course in this College ten years ago, there has been a demand for a short course.

With the growth of the department this demand became so strong that it was deemed advisable to add to the regular College curriculum a **Normal Course in Domestic Science**. Many young women who can not afford to take the regular college course wish to equip themselves as teachers. The specific object of this course is to qualify students to fill positions as teachers and supervisors of the various branches of the household sciences and arts.

The course is thorough and is designed to meet all requirements of the students in an educational way and, at the same time, fit them for teaching that which is of paramount importance—the **organization of the home**.

The subjects pursued are similar to those introduced into the curriculum of the general course. A desire for research work along subjects allied to the household sciences is inculcated and while the thought of the specialist is ever in mind, still a wide horizon is kept in view in order that the education be broad and uplifting. All the subjects are studied from a **Normal** standpoint and the educational value and underlying motives become important factors of the work. See general course (page 84) for outline of various subjects.

ARCHITECTURE

FRESHMAN YEAR.

FALL TERM.

College Algebra, 5.	}	P. M.—Elementary Design, 3. Construction Drawing, 2.
Rhetoric, 5.		
History of Architecture, 2.		
Carpentry Construction, 3.		

WINTER TERM.

Trigonometry, 5.	}	P. M.—Construction Draw- ing, 5.
Masonry Construction, 5.		
Rhetoric, 3.		
Lettering, 2.		

SPRING TERM.

Physics, 5.	}	P. M.— $\frac{1}{2}$ Physical Labora- tory. $\frac{1}{2}$ Surveying.
Surveying, 5.		
College Algebra, 5.		

SOPHOMORE YEAR.

FALL TERM.

Mechanics, 5.	}	P. M.—Orders of Architec- ture.
Analytics, 5.		
History of Architecture, 2.		
Descriptive Geometry, 3.		

WINTER TERM.

Differential Calculus, 5.	}	P. M.—Orders of Architec- ture. Renaissance Design.
Perspective, 4.		
History of Architecture, 3.		
Descriptive Geometry, 3.		

SPRING TERM.

Integral Calculus, 5.	}	P. M.—Romanesque and Gothic Design.
Planning and Requirements of Building, 5.		
Architectural Composition, 3.		
Perspective, 2.		

JUNIOR YEAR.**FALL TERM.**

Chemistry, 5.	}	P. M.—Chemical Laboratory, 3.
$\frac{1}{2}$ Landscape Design, 2.		
Strength of Materials, 5.		
Residence Construction, 3.		

WINTER TERM.

Chemistry, 5.	}	P. M. Chemical Laboratory.
$\frac{1}{2}$ Trusses and Bridges, 5.		
$\frac{1}{2}$ Materials of Engineering, 5.		
Estimating, 2.		

SPRING TERM.

Specifications and Contracts, 3.	}	P. M.—Design, 5.
Trusses and Bridges, 5.		
Geology, 5.		
Superintendence, 2.		

SENIOR YEAR.**FALL TERM.**

Composition of Ornaments, 7.	}	P. M.—Advanced Design.
Architectural Engineering, 5.		
Thesis, 2.		
Seminar, 1.		

WINTER TERM.

Sanitary Construction, 2.	}	P. M.—Thesis, 3. Drawing, 2.
Heating and Ventilation, 3.		
Pen and Ink Drawing, 5.		
Architectural Engineering, 5.		

SPRING TERM.

Constitution of U. S., 4.	}	P. M.—Thesis.
Working Drawings, 6.		

It is so clearly under the provision of all the acts, Federal

and State, relating to Agricultural and Mechanical Colleges, to provide the youth of the land with such theoretical and technical education as shall make them educated and skilled workmen of high order, that the State Board of Agriculture has decided to introduce the foregoing course in Architecture.

The immediate future of Colorado will lay great demands upon young men skilled in making plans for, and superintending the building of artistic and convenient homes and permanent public and business buildings.

The aim of this course is to secure to its graduates an ample preparation for the demands of the best professional practice. To that end, its course of study combines thorough professional training with the essentials of a liberal education, being so framed that the student may acquire thorough skill in draughtsmanship, combined with a critical taste and creative resource in design and sound judgment in construction.

To accomplish these results, the course is so arranged as to present architecture as an art, which, while inseparable from sound construction and obedience to utility, yet lies above and beyond these attributes in the field of the Fine Arts proper. The most important division of the professional work pertains, therefore, to design; and to this subject, in its various phases, the relatively largest portion of the student's time is devoted throughout the course. Careful attention is given to subjects comprehended under the term "Architectural Engineering," comprising pure and applied science, the nature of materials and the theory and practice of construction and of sanitation. Draughtsmanship receives constant attention throughout the course, not only in drawing incident to the Design Courses, but also in various lines of instruction in pure drawing.

The purely professional work of the course thus outlined covers some three-fourths of the time required of the student; the remaining portion being devoted to strictly liberal studies.

The study of Architecture, as here presented, while essential to a proper architectural training, has also strong claims of value as a means of liberal culture, if, together with the purely collegiate branches, consideration be given to that basic element in the professional curriculum which pertains especially to the art of Architecture.

Architectural Engineering, while not a distinct course, is presented in its essential elements.

Drawing in its numerous forms is esteemed as a means of cultivating the perspective faculties, but its great value lies in its peculiar effect in the development of taste, imagination and the faculty of expressing, so vital a necessity in creative work.

The work, at the beginning, may be considered as contributing to this end, although its exercises are given a somewhat formal character, but later charcoal drawing from the cast of ornament introduces the work in pure drawing, expanding into "antique" and "life," while much time is given to instruction in water color (in still life, nature and architectural perspective), and pen and ink rendering. Associated with this work and related no less to that in architectural drawing and in pure science, are the courses in Perspective and Shades and Shadows.

Supplemental to this course, a series of lectures will be given before the classes by prominent architects and members of the Colorado Chapter of The American Institute of Architects, upon the various phases of professional work.

MATHEMATICS

General Statement.—The course in Mathematics is full and complete. The different subjects are taken up in logical order as rapidly as the student has fitted himself for them. The courses offered are the following:

First Sub-Freshman—Elementary Algebra, three terms.

Second Sub-Freshman—Plane and Solid Geometry, three terms.

Freshman—College Algebra, two terms.

Plane Trigonometry, one term.

Sophomore—Analytical Geometry, one term.

Differential Calculus, one term.

Integral Calculus, one term.

Descriptive Geometry, two terms.

Algebra.—This subject is pursued during the First Sub-Freshman and Freshman years. The first term's work is designed to give the student as clear ideas as possible of the extensions introduced into the fundamental operations of arithmetic by the notation of two sorts of quantities directly opposite in character, and the conciseness obtained by the use of literal notation. He is taught the fundamental operations of addition, subtraction, multiplication and division and also the methods of solving simple equations containing one unknown quantity. Subsequent work during the next two terms acquaints him with factoring, common factors and multiples, fractions, fractional equations, simple simultaneous equations containing two and three unknown quantities; involution, evolution, theory of exponents, radicals and imaginary expressions. The text-book used is "Elements of Algebra," by Wells and the work in the First Sub-Freshman year extends to quadratic equations. This subject is continued in the Freshman year.

Geometry.—This subject is taken up at the beginning of the Second Sub-Freshman year, and in the three terms given to this study the student is given a thorough and practical acquaintance with the construction of geometrical figures. He also takes up formal proof and is led to see the logical dependence of the entire subject upon the few axioms and elementary concepts de-

rived directly from experience. He is also given thorough practice in the mensuration of geometric magnitudes. So far as time and ability of the student will permit, he has practice upon original exercises. The year's work covers the whole of Wentworth's "Plane and Solid Geometry."

College Algebra.—For two terms in the Freshman year the student deals with the principles of advanced algebra. The text-book used is Wentworth's "College Algebra." The work begins with quadratic equations, and during the first term the student is expected to cover the entire subjects of quadratics, ratio and proportion, variation, progressions, the binomial theorem, and logarithms. During the second term the following subjects are taken up in order: Variables and limits, series, general properties of equations, derivatives, transformation and solution of equations of the third and higher degrees (involving "Horner's Method" and "Strum's Theorem"), and what time remains is given to choice, chance, and the graphical representation of functions, thus opening the way for Analytical Geometry.

Trigonometry.—This subject is taken up in the Freshman year and during a term's work in it the student is made familiar with "Plane Trigonometry." He is given clear ideas of the trigonometrical concepts, shown their relations and given considerable practice in the practical application of this branch of mathematics.

At this point all students in the Agricultural, General and Domestic Science courses discontinue their mathematical studies. From the wide application of mathematics to all branches of engineering, those students electing any one of the courses in engineering continue their mathematical studies throughout the entire Sophomore year.

Analytical Geometry.—This subject is taught during the first term of the Sophomore year. Wentworth's "Analytics" is the text used, and the student is made acquainted with the method of co-ordinates and the connection between algebraic and geometric forms. The fundamental properties of conic sections, loci of the second order, and higher plane curves are developed and as much more of the subject as time permits.

Calculus.—The Winter and Spring terms of the Sophomore year are devoted to the study of the Differential and Integral

Calculus. "Differential and Integral Calculus," by Hutchinson and Snyder, is the text-book used, and the subject is pursued as there given. The notation of limits is, however, made the logical basis upon which the subject is developed.

Descriptive Geometry.—This subject is taught to the students of the engineering courses for two terms during their Sophomore year. The principles of projection, intersection, development, etc., are discussed and illustrated by a great variety of problems, all of which are accurately worked out on the draughting-board by each student.

The department is provided with a set of Schroeder models from Darmstadt, and with models of warped surfaces, etc., for the purpose of illustration in the study of geometry. There is also a set of drawings for the use and study of curves and curve tracing.

The purpose of instruction in this department is two-fold: first, to give the student clear and exact ideas of magnitudes and their measurements; and second, to give him such skill in computation as to enable him to handle easily and satisfactorily the practical problems he is likely to encounter in after life.

HISTORY AND LITERATURE

HISTORY.

The purpose of the work in history is (1) to give that information concerning the past which the intelligent citizen requires; (2) to aid the student in acquiring a scientific method of investigation and consideration of historical data; (3) to awaken an interest in the great field of history and biography which the library affords.

The following courses in History are offered:

Course I. Ancient History.—This course is offered during the Fall and Winter terms of the first Sub-Freshman year. The student is expected to have had thorough preparatory work in the study of History of the United States. The object of the course will be an acquaintance with the great epochs of history, with special attention to the part taken by Greece and Rome in the advancement of human progress. A text-book will be used, supplemented by library references, classroom lectures and the stereopticon whenever desirable.

Course II. Mediaeval Europe.—A critical study of the movements and institutions which characterize the middle ages, the renaissance and reformation periods, and the rise of modern nations, is given in the Fall term of the Sophomore year. Extracts from the original sources in connection with suggestive studies are used, and the student will be encouraged to form his own opinions and to produce proofs to support his judgment as to the influence of this period in the world's civilization. The reference library, lectures, the stereopticon and historical composition by the students, will be features of this course.

Course III. English History.—This course follows in the Winter term of the Sophomore year. The influence of English history upon American institutions makes this study one of particular interest, and very valuable as preparation for work in English Literature, Constitutional History and Political Economy. A text-book will supply an outline for the course, and collateral readings from the leading authorities will be furnished by the library.

Course IV. Philosophy of History.—This course, offered during the Winter and Spring terms of the Junior year, includes study and practice in historical investigations; the laws governing human actions; reciprocal influences of religion, literature and government; comparisons and criticisms of past civilizations and their relation to modern progress. Adams' European History as a text will supply an outline for the course which will be supplemented by lectures and library readings.

Apparatus.—By means of the stereopticon and a fine collection of views, many scenes of historic and literary interest are brought into the classroom. A valuable collection of foreign photographs also belongs to this department, by which the art and architecture of the past and present are illustrated.

Four cases of historical maps add greatly to the interest in studying history. They include twenty maps from the celebrated presses of W. and A. K. Johnston, Edinburgh, Scotland. These maps illustrate ten periods of European history since the Christian era, and also include seven maps for the study of ancient history and excellent maps for United States History.

LITERATURE.

It is the object of this study to lead students by direct contact with the literary masterpieces to understand the art in literature, and to develop their power of appreciating the strength and beauty of English writings.

Course I. American Literature.—The Spring term of the first Sub-Freshman year is devoted to this course, the purpose being to develop intelligent appreciation of American masterpieces and to promote a love for our standard literature. Several American classics will be made the subject of critical classroom study.

Course II. English Literature.—In the Winter term of the Freshman year a brief historical outline of the periods of English Literature is supplemented by study of the works of representative authors. Masterpieces from Chaucer, Spenser, Bacon, Shakespeare and later writers form the basis for the term's work.

Course III. The Drama.—The Spring term of the Sophomore year will be devoted to Shakespeare and the drama. Lectures will be given on the principles of dramatic art, with particular attention to character study, plot development, and the contrasts between ancient classic and modern romantic drama. Several of Shakespeare's plays will be studied in class. Frequent themes will be required on topics suggested by the reading.

Course IV. English Literature.—The growth and development of literary art during the Seventeenth, Eighteen and Nineteenth centuries will form the basis for work during the Fall and Winter terms of the Senior year. Much reading will be required and more recommended. The class work will consist of the study of several masterpieces from Milton to Tennyson, with written exercises on subjects suggested by the readings.

Course V. English Essays and Fiction.—During the Spring term of the Senior year, special attention is devoted to English prose. The leading essayists and critics will be studied. The history and growth of the novel, will be considered; its place in literature; use and abuse of fiction; fiction as a laboratory for character study, etc., will furnish subjects for the lectures of the course. Illustrative readings will be required.

Library Reading.—The College Library is the laboratory of this department, and four hours per week of library reading is expected of each student in connection with all courses in History and Literature. During the Sub-Freshman course in History the system of library classification is explained, and the student is made familiar with the use and location of the valuable works of reference with which our library is supplied.

CONSTITUTIONAL HISTORY AND LAW

The study of the history of the Constitution of the United States, and of the growth of free institutions, which that document so fitly emphasizes, is a prominent feature of the course, especially during the Senior year. With Andrew's concise but comprehensive text-book as a basis, instruction is given concerning all the events and causes which led to the formation of the National Government as it exists to-day, and the same traced to their historic sources. The workings of the Federal Government, together with its relations to the States, are also amply illustrated by frequent class lectures. Such information is due at the hands of every institution maintained by State or National aid as tending to better fit their graduates for the duties of citizenship, and for the responsibilities of a republican form of government which rest with especial weight upon those who have received their education free at the hands of the State and Nation.

In connection with this study of constitutional history, there is also instruction given in international law, with Davis as a text-book, and which includes not only a concise investigation of the general principles and rules of this science, but a history of all the great diplomatic questions which have at different periods claimed the attention of the people of the United States, from the French alliance during the war of the Revolution to the conference at The Hague. This naturally comprises a consideration of the diplomacy which has led to all the vast acquisitions of territory which have extended the United States from the Atlantic to the Pacific.

Closely associated with this work are studies in political economy with Ely as a text-book, and also in irrigation law, a knowledge of which is of such supreme importance in this and other states in which agriculture by irrigation is practiced. Frequent lectures on the history and growth of the trans-Mississippi West are also given.

These studies, following a thorough course in history, cover in a comprehensive manner the various political sciences, and, fitly supplementing the scientific and technical work of other departments, will be found of every-day practical advantage to all graduates when they shall have entered upon the real and active duties of life.

RHETORIC AND PHILOSOPHY

RHETORIC.

The aim of the following course in Rhetoric and English Composition is, in general, two-fold: (1) To train the student in the theory and the practice of English Composition; and (2) by the study of the fundamental principles of style, to aid him in an intelligent appreciation of literature.

Course I. Elementary Rhetoric and Composition.—This course extends daily throughout the First Sub-Freshman year. The classroom work is divided equally between theory and practice. **Beginnings of Rhetoric and Composition**, by A. S. Hill, Peniman's **Prose Dictation Exercises**, and Webster's **Academic Dictionary** are the required text-books. Composition work is carefully encouraged, and written exercises required almost daily. Students are drilled to correct their own mistakes. Before entering upon this course, or upon any later course, students must prove their unquestioned acquaintance with technical English Grammar.

Course II. Elementary Rhetoric and Composition.—Elementary Rhetoric (English in general) is continued informally throughout the Second Sub-Freshman year, any written work of any of the formal scheduled courses being the basis for criticism. The aim of this course is to insure accuracy in the interpretation of English text-books, lectures, and the like, as well as to emphasize as strongly as possible the fact that English is the basis of accuracy in scholarship. Although this course is informal (i. e., not subject to set lessons and hours), it is a prerequisite for all English work of Freshman rank or higher.

Course III. Rhetoric and Themes.—This course follows the **Elementary Rhetoric and Composition** of the Sub-Freshman class, which is a prerequisite. Devoted mainly to the study of essay structure and the fundamental principles of the different forms of discourse. Analysis of good prose models. The course is given daily throughout the Fall and Winter terms of the Freshman year.

PHILOSOPHY.

Course 1. Psychology.—A course of elements and outlines of Psychology is given in the Spring term of the Junior year, and it aims to familiarize the student with first psychological principles. The course is supplemented by lectures and simple laboratory work. Text-book for 1905, James' **Psychology**—**Briefer Course**. Three hours.

Course II. Logic.—This course is elementary, and is given the Fall term of the Senior year. It is presented through recitations, discussions, and many original exercises. The syllogism is especially and minutely worked out. A number of scientific and philosophical arguments, as well as characteristic judgments of immediate perception are studied. The aim is to bring out in a clear and practical manner both the inductive and the deductive sides of inference, and to point out some of the principles of philosophy that are involved in them. The text-book for 1905-1906 is Creighton's **Introductory Logic**. Three hours.

Course III. Ethics.—This course is given the Spring term of the Senior year. The work in Ethics bases itself upon the psychological ideas acquired in the previous courses, and applies them to the analysis of character, habit, desires and ideals from an ethical point of view. Mackenzie's **Manual of Ethics** is followed pretty closely as a text-book, supplemented by library work. Three hours.

MODERN LANGUAGES

GERMAN, FRENCH AND SPANISH.

The department of modern languages in American colleges, especially in such as this, with the practical side of life in view, is commonly conceded a most important one, and consequently a large place in the curriculum is assigned to it. The close relation and connection of American institutions of learning with those of similar character in Germany, the relations we have with Germany in commerce, the rich literature of Germany in chemistry, engineering and agriculture, the social and industrial intercourse between the countries have made the study of German an important factor in American institutions. From the beginning, the German language is used in the classroom as a medium to teach German. This well tested method has yielded, during the many years of its use, very satisfactory results. The practical claims of the German language in a country where millions of German-speaking people live, where business relations and demands call for an actual and practical use of it, require that this language become as far as possible a living language in the mouth of the student.

What has been said of German can be said also of Spanish.

The close relations of the United States with Central and South America and the various islands where Spanish alone is spoken, the increasing Spanish-speaking population in our own and neighboring states, has increased the value of a speaking knowledge of this language.

The French language had been considered, until a few years ago, the language of intercourse between civilized nations, but German and Spanish are fast taking this place. And yet the French literature is rich, especially in the lines of mechanical and electrical engineering, and is spoken in several countries to a larger extent than German or Spanish. For this and other reasons, the study of French is considered very necessary. Special stress is laid on a speaking knowledge of this language in our method of instruction.

It is the aim of this department not only to give the students a superficial reading knowledge of the three mentioned modern languages; but the students are also taught to speak these three

languages fluently, and next to the grammatical knowledge, the conversational method is applied and used in their study. The students are required to take at least one modern language in their respective courses of study, but in some cases they may take their choice of one of the three named languages, with the consent of the heads of the respective departments.

The best and latest methods as well as the best text-books are used. A practical, that is, a speaking knowledge of German, French and Spanish will always be the aim of the department.

We close with the great German philosopher Goethe's dictum: "He who does not know any language beside his own, does not know his own language perfectly."

COMMERCIAL COURSE*

JUNIOR YEAR.

FALL TERM.

Commercial Arithmetic, 5.	}	P. M.—Bookkeeping and Pen- manship.
Spelling, 5.		
Rhetoric, 5.		

WINTER TERM.

Commercial Arithmetic, 5.	}	P. M.—Bookkeeping and Pen- manship.
Composition, 3.		
Themes, 2.		
Business Correspondence, 5.		

SPRING TERM.

Commercial Arithmetic, 5.	}	P. M.—Business Practice and Banking.
Accounting, 5.		
Business Correspondence and Penmanship, 5.		

SENIOR YEAR.

FALL TERM.

International Law, 3.	}	P. M.—Stenography and Type- writing.
Stenography, 2.		
Commercial Geography, 5.		
Orthography, 5.		

WINTER TERM.

Commercial Law, 4.	}	P. M.—Stenography and Type- writing.
Political Economy, 3.		
Sociology, 3.		
Stenography, 5.		

SPRING TERM.

Stenography, 7.	}	P. M.—Typewriting and Office Practice.
Commercial Law, 4.		
Constitution of U. S., 4.		

*The Commercial Course will be discontinued June 1, 1906. Students registering for the work of the Junior year 1905-'06 may continue in the course for the one year only.

The aim of the course is to meet the wants of those who are seeking a high grade business education. It trains the student to meet the exacting demands of modern commercial life. The fact is recognized that the market is already overcrowded with young people of limited and imperfect preparation and unable to avail themselves of the opportunities of the business world.

It is not the design of the Commercial Department to educate students for a business life in the shortest possible time, but rather to train them in such manner that they may fill positions of the highest trust. Experience has clearly shown that persons of limited and imperfect training invariably fall into the lowest class of workers; while those who are well trained and educated are sought and liberally paid for their services.

The instruction of this Department articulates so closely with the work of the College that the two harmoniously blend and unite to give a thoroughly cultural as well as technical training for the higher business pursuits.

Students seeking the benefit of a business education will not only secure them in full measure, but they will also have the advantage of being connected with an institution where superior facilities for all kinds of educational and cultural work exist. The large library, the well-furnished museum, the College associations of all kinds, and all the elaborately equipped laboratories are open to students of the department, and thereby they can round out a training far broader and more liberal than that secured in a school from which such cultural opportunities are almost wholly absent.

Thoroughness.—One of the most important features of the course is thoroughness. Herein lies the secret to success, lucrative positions and promotion. Thorough training is absolutely necessary. The student's work is examined critically and is not credited unless it is up to the required standard.

Shorthand.—It has been truly said that the practice of shorthand "draws out all the powers of the mind; it incites invention, improves the ingenuity, matures the judgment, and endows the retentive faculty with the superior advantage of precision, vigilance and perseverance."

The student devotes from two to four hours per day throughout the Senior year to the acquirement of this useful and indispensable art, using Isaac Pitman's Shorthand Instructor (20th Century Edition), as a guide. Students who complete this course find no difficulty in obtaining high-grade positions.

Aside from the value of phonography as a means of obtaining an English education, embracing as it does, a thorough knowledge of orthography, grammar, composition, rhetoric, etc., the earnest student has no surer means of turning his knowledge to practical account than by the successful completion of this course, which includes instruction in punctuation, preparation of manuscript for the press, proof reading, etc.

The work of the department appeals strongly to teachers, graduates of high schools, academies, and universities, as the surest means of bettering their immediate condition, and in many instances proves a stepping-stone to higher pursuits and positions of trust and responsibility.

The Literary and Scholastic Attainments of the graduates of the Commercial Course is the strongest factor in commending them to the business and professional world, into which they are received without question. There is no better assurance of obtaining a "position" than the possession of a diploma from this department.

The United States Civil Service offers opportunities for which it is the special province of this department to prepare young people desirous of qualifying for the examinations.

Students who pass the preliminary amanuensis examinations the first week in April of each year, are allowed to begin specialization in the various branches of reporting, i. e., mercantile, legal, legislative and technical.

Typewriting.—"The typewriter is so ingenious and simple in its construction that the average person can learn to write words on it in ten minutes' time. Hence the long popular belief that no special instruction is needed, but that a few days' practice alone will enable one to become a competent and valuable operator. This fallacy has brought disappointment and failure to many a bread-winner, has been the cause of untold annoyance to employers, and has forced capable and conscientious teachers

to let their students go out unprepared because public opinion refused the time and expense necessary to learn properly the art of Typewriting. As a natural result, business men are now complaining bitterly of the incompetency of applicants, even when they are the product of so-called business schools."—Complete Typewriting Instructor.—Barnes.

"The workers of the world bend before the machine which Puck parodies as being 'more puissant than the Gatlin gun,' and eagerly acknowledge its power. Commerce, the law, science, literature, art, business everywhere, education in manifold aspects—one and all, go to the little machine for some measure of assistance, and no branch of physical or intellectual labor comes away unsatisfied."

"Man's life is quickened and lengthened by the tireless activity of the writing machine. Its incessant click beats marching time to every forward movement, and makes progress more progressive. Men turn away from weary toil to find labor lightened with sympathetic zeal when the fingers begin their salutary movements."

"A new profession has opened to the gentler sex, and all welcome her to a place in affairs. Educators are not indifferent to the signs of the times, and the schools are receiving an impulse from no less an agency than the writing machine."

"Hardly since the dawn of the present era of civilization has an invention or discovery worked greater wonders; never, we think, has a single mechanical device contributed so widely and so variously to the welfare of man. The pen is indeed mighty, but the steel corrodes. The tongue is silvery with speech, but the rhythmic keys speed language on its mission. The mind is pregnant with fertile thoughts, but ease and speed of writing makes the human intellect ten times more prolific. Commerce expands with the peopling of the continents, and the natural growth of prosperity on land and sea; but prominent among the activities of the world the typewriter already occupies an important place—busy where business is liveliest, making man's intercourse with man readier and closer, and contributing more or less directly to the success of almost every human achievement."—Bates Torrey.

Needless to say the "touch" system of typewriter operation is taught. The equipment is unequalled anywhere in the West,

and consists of twenty-five machines of standard make. From two to three hours per day are given to instruction and practice in this subject. The following outline, taken from Pitman's Phonetic Journal, is followed with slight variations:

1. Business correspondence from shorthand, longhand and printed matter.

2. Copying badly-written and confused manuscript; literary, technical, commercial, legal, scientific and medical matter. Correct arrangement of manuscript matter; necessary line-spacing for various kinds of work, foot-notes and extracts, side-headings.

3. Advanced displayed work. Correct centering of headlines; arranging matter to balance on paper so as to get top and bottom margins approximately equal.

4. Advanced tabular work. Rules for dividing scale in order to arrange columns regularly and accurately. Accounts, red ruling. Schedules of quantities and prices, market, stock exchange, and other quotations and tabulated matter from plain and rough draft.

5. Legal work, bills of costs, agreements, indentures, wills, affidavits, statements of claim, writs, depositions, etc., etc., draft copies engrossments, correct endorsement, and backing.

6. Balance sheets and financial statements; wide and narrow carriage; red ruling.

7. Specifications: architects', engineers', contractors', electricians'.

8. Companies' prospectuses; corporation reports.

9. Tenders, estimates, and contracts.

10. Commercial, literary and legal abbreviations; chemical, mathematical, and other signs; foreign words and phrases of international use, with their meanings.

11. Dramatic work; prompt book; actors' parts; correct red ruling.

12. Duplicating, carbon, semi and full; stencil, letter press copying.

13. Mechanical construction, manipulation, and care of the machine; degree of touch, the wrong side of the paper must not show perforation by full stops, commas, hyphens, etc.; possible defects and accidents; rectifying temporary derangements likely to occur to machine.

14. Correct use of the various characters composing the keyboard; signs made by combinations, foreign accent marks, diphthongs, raised letters. Roman notation.

15. Writing short sketches and answering questions relating to office routine, commerce, banking, insurance, and stocks.

16. Writing short essays on subjects of literary interest.

17. A syllabus of the United States Civil Service.

Bookkeeping.—The student is first instructed in the elements and principles of theoretical bookkeeping, both double and single entry, and as soon as he shows that he has a clear understanding of the elementary work, he is promoted to advanced bookkeeping. Here he learns to keep books in various lines of business, including mercantile, both wholesale and retail; and manufacturing. After acquiring sufficient skill in advanced bookkeeping, and passing satisfactory examinations, the student enters actual business practice; is assigned his official desk as a business man, and is furnished with a cash capital and stock of merchandise, according to the business in which he is to engage. He issues and receives every form of business paper, including checks, notes, drafts, orders, receipts, leases, articles of agreement, bills, invoices, statements of accounts, account sales, bills of lading, money orders, C. O. D. sales and purchases, and, in fact, every form and description of business paper in use. He writes and receives letters pertaining to all affairs of the business, and secures a first-class drill in correspondence. He is taught to brief and file every business paper received. His work covers the entire range of business transactions, from the simplest to the most difficult.

In the theoretical work the student is made familiar with the first principles of the science of bookkeeping. He is guided carefully until he can master the simpler forms of the daybook, journal, cash-book, and ledger, and can post and close his books correctly. Frequent exercises in journalizing and closing ledgers are given for class drill. In the advanced bookkeeping the student will gradually be required to master all forms and sets of books in the various lines of business, which include partnership, joint stock companies, corporations, etc.

A rigid inspection and examination of books and papers relating thereto, is frequently made and under no condition will work be passed and credited unless it is strictly up to the required standard.

The office department consists of a national bank, a state bank, a wholesale and retail mercantile business, and a commission office; also facilities for a commercial exchange, and is equipped with books, modeled after those used by large concerns, which are kept by the students. The student has from six to twelve weeks' office practice before entering the final examinations.

The average student will complete the bookkeeping in one school year, after which, if capable in other directions, he will be able to do the accounting work required in any business office.

Commercial Law.—The need for a thorough understanding of the underlying principles of this subject, on the part of those who expect to become identified with the practical world of affairs, is patent to every prudent business man and woman. To meet this requirement a thoroughly systematic and comprehensive course of instruction is offered with the end in view of preparing the student for the exacting demands of modern commercial life. A study of the business laws and customs of foreign countries with which we have interests in common is included in this course, which continues during the winter and spring terms of the Senior year. The work of the text is supplemented by lectures on current topics of general interest having a direct bearing upon the subject.

Commercial Geography.—In this age of industrial achievement and commercial advancement, in which the United States plays so important a part, a knowledge of the conditions surrounding the growth of the Nation as a commercial and maritime power is indispensable. During the fall term of the Senior year the student devotes five hours per week to this interesting topic, which includes a study of "the natural resources and productions of the earth; of the distribution of products; of routes of commerce and lines of transportation; and of markets and manufactures," including such subjects as Domestic, Colonial, Foreign and Carrying Trade. Adams' text-book of **Commercial**

Geography is used, added to which the well selected library of the College, the publication of the **National Geographic Society**, and the copious maps of the department, serve to make this delightful study a wellspring of absorbing interest and a never-ending source of profit.

Commercial Arithmetic.—Mathematical accuracy and rapidity are necessary in the present business life. To teach the student to compute correctly and rapidly is the aim of this work. Daily classes are conducted throughout the Junior year, in which all practical short methods are taught.

Penmanship.—Penmanship is taught in an interesting and systematic manner. No branch of study in a business education is of greater importance. One of the best recommendations in securing a position is a good strong business handwriting. No waste of time is allowed in useless flourishes, the student being compelled to learn a clear, legible, rapid business hand, such as strikes the mind of the business man as at once the most practical. A complete drill in pen-holding, position and movement is given.

Expense.—Tuition is free. All books and stationery for the two years' course need not cost to exceed \$25. Board and lodging at from \$4 to \$5 per week; club board at reduced rates.

Advantages.—1. Free tuition. Text-books and all stationery sold at cost. 3. A specialist in charge of each class. 4. First-class office equipments for actual business. 5. The large library, museum, College associations and laboratories open to students. 6. Military drill. 7. The students, being under the direct influence of the College, receive culture and obtain privileges that cannot be equalled.

Requirements for Admission.—Candidates for admission must be graduates of accredited high schools and at least fifteen years of age.

Students who complete the Second Sub-Freshman year are admitted into the Junior class without examination.

Credit is given for advanced work.

Diploma.—Students who complete the two years' course will receive a diploma.

MILITARY DEPARTMENT

The importance of military training, both to the individual and the state, is so apparent that comment thereon is here unnecessary, further than to say that the physical training and development alone is sufficient proof of its benefits. The growing demand for military instruction in connection with school work, and the fact that the State Agricultural College is the only state institution where such a department exists, has led the authorities to make the work as thorough as practicable.

For instruction the cadets are formed into companies and the companies form a battalion. Each company has a captain, two lieutenants, five sergeants and five corporals. The officers and non-commissioned officers are selected from those in the higher classes showing the most proficiency in the work.

The work in the fall term embraces the school of the soldier, company and battalion in close order. Battalion drills are continued at intervals throughout the year. Extended order drill is taken up in the winter term and continued the spring term. This includes skirmishes and battle exercises in platoon, company and battalion; advanced guard, rear guard and outpost duties. Inspections, battalion parades, guard mounting and street parades are occasionally given. Inspections are given at such times as to insure the proper care of the equipment. All military exercises are performed in accordance with the United States Drill Regulations.

Practice in Artillery drill is had during the spring term. This is instruction in the school of the cannoneer, unmounted, and is in accordance with United States Artillery Drill Regulations.

The signal corps does practical work in transmitting messages, both by means of signal flags and with heliographs. The systems used are the same as those used in the Government service.

During unfavorable weather theoretical instruction is given, with occasional drills in the manual of arms, which can be executed by the battalion as a whole, within the armory.

The military encampment, held at the close of the school year, affords an excellent opportunity for further instruction in

all the duties of the soldier in camp and garrison. To fully carry out this plan in accordance with regulations, the College Battalion has access to the camp and garrison equipage of the State Militia.

The Department is equipped with 250 cadet rifles, belts, cartridge boxes, bayonets and scabbards; two 3-inch rifled field pieces; National and Battalion colors; swords for officers; signal flags and heliographs; drums and trumpets for a field band of fourteen members.

Regular Military encampments are held at least every two years. This is considered a part of the college work and the attendance of the cadets upon these outings is compulsory.

BATTALION ROSTER FOR 1904-1905.

STAFF.

R. A. Maxfield.....	Commandant
W. A. Harris.....	Adjutant
R. C. Spitzer.....	Sergeant Major
F. P. Hall.....	Color Sergeant

BAND.

Harvey Riddell.....	Drum Major
H. M. Giller.....	Director
Lynn Kennedy.....	Principal Musician

COMPANY A.

Geo. M. Neel.....	Captain
L. C. Gilbert.....	1st Lieutenant
B. T. Counter.....	1st Sergeant
F. L. Petty.....	2nd Sergeant
E. P. Woods.....	3rd Sergeant
G. Rosenburger.....	4th Sergeant
A. G. Green, I. J. Smith, Max Goldhammer, D. E. Phil- lips	Corporals

COMPANY B.

R. K. Fuller.....	Captain
J. J. Girardet.....	1st Lieutenant
B. M. Mathias.....	2nd Lieutenant
C. L. Olson.....	1st Sergeant

J. Sylvester.....	2nd Sergeant
J. H. East.....	3rd Sergeant
O. V. Adams.....	4th Sergeant
F. Earl, M. Hamilton, F. Roullard, W. C. Cole.....	Corporals

COMPANY C.

J. C. Counter.....	Captain
R. J. Cooper.....	1st Lieutenant
L. Snively	2nd Lieutenant
B. A. Snow.....	1st Sergeant
H. F. Wilson.....	2nd Sergeant
W. L. Putnum.....	3rd Sergeant
C. L. Stults.....	4th Sergeant
N. J. Miller, L. M. Montgomery, A. A. Anderson, L. C. Lamb, Roy Hice	Corporals

COMPANY D.

E. J. Iddings.....	Captain
Geo. P. Weldon.....	1st Lieutenant
A. J. Fisk.....	2nd Lieutenant
H. J. Phelps.....	1st Sergeant
T. W. Ayres.....	2nd Sergeant
W. F. Rosenburg.....	3rd Sergeant
P. Killgore, J. A. Strachan, L. G. Gooding, T. D. Urbahms	Corporals

LIBRARY

The College Library was founded in 1878 by donations from the members of the faculty and interested citizens of Fort Collins, aided by a small purchasing fund derived from the one-fifth mill tax.

The Library is supported by purchasing funds made for the Library directly and for the books of the departments. This is derived from the funds of the College. In addition there is a fund known as "The Annie Jones Fund," from the name of the donor, which yields a small annual income. This Annie Jones Fund is carefully used for books that will be a shelf memorial to the fund.

The library contains nearly 20,000 volumes and about 5,500 pamphlets (a part of which is the Experiment Station Library), and is classified. (Decimal.)

The catalogue of the Library is a simple dictionary card catalogue and is made for student use.

The private library of Dr. Aylesworth has been placed in the main building of the College, and is a good scholar's library. It is especially rich in modern literature and is an unusually large private library. It is a well-balanced collection of books and is extremely useful to the advanced students, who have special privileges in it, granted by the President.

The College Library is open from 7:30 a. m. until 6:00 p. m., except Saturdays, holidays and Sundays. On Saturday the Library is open from 8 to 4 and on holidays as the occasion demands.

The Library may be called a typical College Library, as it stands, with a large collection in history and literature, but as this Library will not remain as it now is, it may be better to describe the plan and the future of the Library.

The Library is an institution within an institution and grows to the limit of the response of its environment. The Library should be a help to the student at every turn in College and is to be judged by its service; if it helps it is a good library, and if not, it is a poor library. The College Library has responded to the call from the student body, and the College has responded to the call for support, until the Library completely

outgrew its old quarters and overflowed into other rooms. As soon as the new addition to the Main building was finished, the Commercial Department was removed to the new rooms and the Library was moved into a building all its own, which provided floor space for a reading and reference room, for the stack room and for the use of the apprentices and the classes in Library Science and Library Handicraft.

In this building we shall have the best scientific Library in the West, and shall be able to do things that will give the College within the next five years a collection of 25,000 or 30,000 volumes.

Systematic instruction in library science more than library apprenticeship has been begun and we expect to furnish well trained library workers. Information concerning this course in library science will be furnished on application.

We are prepared to furnish competent cataloguers and assistants for private libraries, school libraries and public libraries and to correspond with librarians or library boards.

The long list of periodicals usually printed in the catalogue and covering ten pages, has been enlarged beyond the available space of this publication. The list now contains 350 titles without counting the publications of the states of the Union and the United States government; but no list can quite cover the ground which may be well described as departmental affiliations, and which are especially rich. Our departmental libraries take on most of their professional value from faculty association and the wide acquaintance of the faculty members with the professional world in engineering, agriculture, commerce, domestic science, biological and natural sciences and their applied forms in the work here.

ALUMNI ASSOCIATION.

The Alumni Association of the State Agricultural College enumerates about two hundred and twenty-five graduates of the school among its members. The object of the organization, as set forth in its constitution, is to promote the interests of the Agricultural College of Colorado and to perpetuate a fraternal spirit among the graduates of the school.

The annual reunion and banquet of the Association occur at the College during commencement week.

Officers are elected at the annual meeting. Offices are maintained at the College.

Officers for 1904-1905:

President.....Bertram A. Gage, Fort Collins, Colorado
 Vice President.....Ralph H. Hess, Fort Collins, Colorado
 Secretary.....Mrs. Frank Miller, Fort Collins, Colorado
 Treasurer.....Richard A. Maxfield, Fort Collins, Colorado

ALUMNI DEBATING ASSOCIATION.

A debating association is maintained among the graduate members of the "pioneer" literary societies of the College—Philo-Aesthesian and Columbian societies. The debate names an important date of commencement week.

Officers for 1904-1905:

President.....Earl Douglass, Fort Collins, Colorado
 Vice President.....B. G. D. Bishopp, Fort Collins, Colorado
 Secretary.....Frank H. Thompson, Denver, Colorado
 Treasurer.....Ralph H. Hess, Fort Collins, Colorado

COLLEGE ORGANIZATIONS

LITERARY SOCIETIES.

There are eight student societies connected with the College. Meetings are held weekly throughout the school year. Students are admitted to these societies by vote of the members. The fees and dues are not burdensome.

"The Philo-Aesthesian Society" meets in the College Chapel. "The object of this Society is to encourage free investigation and to promote growth in literary composition with readiness and fluency of speech."

"The Columbian Literary Society" meets in Horticultural Hall. "This Society is organized to train its members in literary work, to instruct them in parliamentary law, and to promote their growth in general knowledge."

"The Athenaeum Literary Society" meets in the lecture room in the Civil Engineering Building. Its purpose is, "to advance the literary culture of its members, give them proficiency in debate, and train them in parliamentary law."

"The Agricultural Club" meets in Agricultural Hall on Friday evening of each alternate week. It is composed largely, though not exclusively, of students taking the Agricultural course, graduates of the College, and instructors connected with the various departments doing work in Agriculture and allied subjects. Its object is to promote the study of the practical problems in agriculture.

"The Forensic Club" meets bi-weekly in "Forensic Hall." Its membership is limited to twenty-five members. It not only prepares debates among its own members, but has arranged for a number of intercollegiate debates. Its sessions are closed. Close attention is given to parliamentary practice.

"The Lyceum" was organized and began its work at the beginning of the spring term, 1904. Meetings are held bi-weekly. The membership is composed exclusively of students of the Sub-Freshman classes. The work of the organization is subject to the council of a member of the faculty chosen as Mentor by the society. The object of the Lyceum is so to develop its members in literary ability that they may enter the older societies

well prepared to maintain a high literary standard in the student body.

"The Civil Engineering Society" meets bi-weekly in Civil Engineering Building. Its purpose is to present the literary side of their important technical work and to keep a record of the doings of the department.

"The Domestic Science Club" meets bi-weekly in Domestic Science Building. Its purpose is to cultivate the art of expression relative to the home and social problems of the time.

Nowhere does the Literary Society stand for more than in the Agricultural College. It forms an important part of college life and helps to put into concrete form the investigations of the class room.

The exercises of the forum and the reading table give the student a wider horizon, a widening consciousness of his own powers, and an ease in both conversation and public address.

The College takes unusual pride in the zest and finely tempered rivalry of these societies, regarding them as important co-workers in the upbuilding of the school.

ORATORICAL ASSOCIATION.

This Association was organized in 1892. Its object is to encourage the study and practice of oratory in the College. Students registered in any of the four higher classes may be admitted to membership by vote of the Association.

The Association holds three contests each year; one for the members of the Sophomore and Freshman classes, another for the members of the Senior and Junior classes, and a third for the members of the Senior and Junior classes of the Commercial Department.

Three medals are awarded each year; one of gold to the successful orator in the Senior-Junior contest, and one of silver to the Sophomore-Freshman orator taking first rank, and one of silver to the first rank in the Commercial contest.

The orations are passed upon by two sets of judges; one on thought and composition and the other on delivery.

This organization is associated with similar associations in the three other leading institutions of higher learning in the state, in the State Oratorical Association. Under the direction of the latter organization occurs an annual intercollegiate ora-

torical contest by which selection is made of Colorado's representative at the annual interstate contest among the winning contestants of the state organizations of Indiana, Ohio, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, and Colorado.

NATURAL SCIENCE CLUB.

This Club was organized by the members of the Faculty and students of the College in March, 1889. The object of the organization is to keep its members informed upon recent advances in science, and especially to interest students in scientific subjects and to encourage them in making original observations. Meetings are held monthly and are open to all who can attend.

Y. M. AND Y. W. C. A.

This non-sectarian religious movement has had a providential growth in the colleges of the world.

The student mind has long been wearied by the endless discussions of creeds and the effort to dogmatize every being and every principle in the universe. But no mind turns so eagerly to devotion of a rational quality and to a life of humanitarian service, as does the mind of the modern student. Witness the course of college movements for the betterment of society and the intense interest manifested by students in sociological problems.

The student's pulse beats fast beneath any heavenly vision that calls him to a wider knowledge and to a nobler appreciation of human worth. Every phase of modern science and philosophy tends to make him reverent and helpful to his fellows.

These two Christian Associations, one for young men and the other for young women, have come into college life for the two-fold purpose of enriching the faith of the individual student and unifying the student body for clean living, a tolerant bearing toward all conditions of life, and the making of a home feeling in the heart of the young man or young woman away from home the first time.

Special emphasis is laid upon unbiased Bible study in groups or circles.

The College authorities have given these organizations a permanent home in the Main College building. It was furnished by the Young People's Church Societies of Fort Collins.

Officers for 1905-1906:

Y. M. C. A.

G. P. Weldon.....	President
E. P. Woods.....	Vice President
E. N. Stidd.....	Secretary and Treasurer

Y. W. C. A.

Edna Garbutt	President
Grace McGuire	Vice President
Anna Albert.....	Resident Secretary
Nora Fullerton	Treasurer

THE PROHIBITION LEAGUE.

The Prohibition Club receives the universal support of the student body. Its work among the students and the young people of the city is most commendable. The Club holds an annual oratorical contest which is an important event of the College calendar.

THE SAN JUAN BOARDING CLUB.

In 1894 a small number of students, feeling themselves unable to pay the rates demanded for board at private boarding houses, resolved to organize themselves into a boarding club, and to divide the expense ratably among themselves. They accordingly chose their officers, raised a common fund, rented quarters, hired a cook, and proceeded to exemplify anew the American capacity for self-government. By careful business management they succeeded in procuring excellent board at about two-thirds to three-fourths of the rates they had heretofore been compelled to pay. The club prospered from the start, and has continued to furnish board to as many members as its quarters could accommodate. Under the club management the students determine the bill of fare, purchase the materials and pay their cook for serving them. "Kicking on the grub," is thus relegated to the museum of antiquities. By conducting their business upon a strictly cash basis the club secures its supplies at the lowest market prices, and it is to careful financial management that the club's success is to be attributed.

So successful has the club been that in 1904 it was determined to reorganize it, enlarge its scope and incorporate it under the laws of the state as a corporation. The co-operative principle

is still at the basis of the Association. It is purposed to build a home for the members of the corporation while they are students of the college, in order to relieve somewhat the increasing difficulty of finding suitable quarters in the vicinity of the College.

Beginning in September, 1904, The San Juan Club has conducted two boarding houses, both located conveniently. These two boarding houses accommodate about 100 members. Persons desiring to reserve places at the tables of this association may do so by mailing to The San Juan Club their applications, accompanied by the membership fee of one dollar. Such reservations will be good for the first five days of the College term, at the expiration of which time the reservation will lapse unless further arrangements are made.

THE "GRUBB" CLUB.

Crowded conditions in the student boarding houses during the year 1903-'04 gave evidence that a new boarding club could be maintained with considerable advantage to the students and without material injury to the clubs and boarding houses already existing. The Grubb Club was organized in September, 1904, and has almost completed its first year with entire success.

"The Grubb Club," organized for the "dispensation of grub," was, however, not named for that reason, but in honor of Eugene H. Grubb, of the State Board of Agriculture, who has taken a paternal interest in the welfare of the organization.

The Club is under the direction of the student members and the officers are elected from their number. A cook is paid a certain sum, per week, for each boarder. All supplies are purchased by the steward, and bills are audited and paid by the Auditing Committee. A Fort Collins bank cashier acts as Club Treasurer.

During the year just closing, the cost of board averaged \$11.00 a month, each. Qualifications for membership are (1) regular enrollment as college student, (2) payment in advance of entrance fee and monthly assessments, (3) gentlemanly conduct at all times. Application forms may be had at the President's office.

ATHLETIC ASSOCIATION.

It has long since been accepted as an indisputable fact that a well-balanced mind shall be supported by a well-trained and

developed body. Those in authority at the Agricultural College stand by the principle that mind and body should be developed jointly and to this end College Athletics in a conservative form are encouraged.

A physical director is employed by the year, who directs and coaches the football, baseball, track, and girls' and boys' basketball teams, and who also has charge of the indoor or gymnasium work.

Gymnasium classes for girls are compulsory during the winter months. It has not been found necessary to require the boys to attend gymnasium as they take a natural interest in the work.

The Agricultural College has the largest and best equipped College Gymnasium in the State. The athletic teams do their training on a large field set aside for that purpose.

The records made by the Agricultural College teams this year have been gratifying. The teams were made up of bona fide students who played hard for their alma mater, but who never forgot the principle that they were first gentlemen and then players.

It is instilled into the boys from the start that to win is commendable, but that to win by fair means, or not at all, is still more commendable.

The motto of the C. A. C. athletic teams is:

"Who misses or who wins the prize,

"Go, lose or conquer as you can;

"But if you fall, or if you rise,

"Be each, pray God, a gentleman."

COLLEGE PAPER.

The Rocky Mountain Collegian, published by the students of the College, was first issued as a monthly journal in December, 1891; but since September, 1901, has appeared regularly twice a month. The college paper has a field and a mission peculiarly its own. It cannot hope to enter the field of the magazine or the newspaper. The college journal is a champion of the school. It is a chronical of college events and college history; it stands equally ready to criticise fearlessly and to bestow just commendation; it encourages the representatives of the school in defeat, congratulates them in victory and cheers

them to earnest endeavor in every worthy cause. Thus, a college paper should be a mirror of the true work, thought and spirit of student life, and such is the aim of the Collegian. The management of the paper is in the hands of a student editorial staff and deserves the support of every student and friend of the college.

Staff for current year:—

Edward J. Iddings.....	Editor-in-Chief
George M. Neel.....	Business Manager
Edna Garbutt.....	Literary Editor
Harvey Riddell.....	Society Editor
Martin Hamilton.....	Athletic Editor
James C. Counter.....	Local Editor
George P. Weldon.....	Exchange Editor
John J. Sylvester.....	Advertising Editor
J. Birkhahn.....	Assistant Advertising Editor

C. A. C. MILITARY BAND.

The Military Band of thirty pieces is an important adjunct to the Cadet Battalion. This organization receives daily instruction by a competent band master throughout the College year and ranks among the best concert bands of the State. The College Band takes part in all local parades, military and civil, and renders semi-monthly concerts in the chapel during the Spring term.

GLEE CLUBS.

A Glee Club and Male Quartette under the direction of Mr. Geo. E. Toomey, and a Ladies' Glee Club, directed by Mrs. W. H. Olin, add much to the strong musical combination of the school. These organizations present rare opportunities for musical culture which should assume an important part in a collegiate education.

GENERAL INFORMATION

Students admitted to the First Sub-Freshman class shall maintain a minimum grade of seventy per cent, in at least two studies during the succeeding term or be required to discontinue College work.

Applicants appearing late in the College year will be required to pass, in addition to the entrance examination, a further examination in the work already passed over by the class they desire to enter.

Regular and Special Courses.—Unless there are strong and excellent reasons for it, students will not be allowed to take a special course of study; and, in case it is allowed, the student must show that he is well qualified to pursue the studies selected, by passing such examinations as the Faculty may assign. No student will be allowed to change his course during the progress of a term, or will he be allowed to drop a study unless by permission of the Faculty.

All applications for special courses of study must be made to the Chairman of the Committee on Examinations, by mail or otherwise, at least two days before the opening of the term. Except under unusual circumstances, it will be useless for any person to apply for a special course of study involving less work than is required of the students in the regular course.

Registration.—The first three days of the College year are devoted to examination and registration. New students will be met at the trains by Committees of young men and women from the Y. M. and Y. W. C. A., who will take them to the College at once for registration, and will assist them to find good homes and open for them the doors of College life.

Grades.—In September, 1899, the passing grade was raised from 65 per cent. to 70 per cent. All students who fail to make a standing of 55 per cent. shall be considered "failed," and shall be required to take the subject over again in class. Those making a standing of more than 55 per cent., and less than 70 per cent., shall be considered as "conditioned" and shall be allowed one special examination before the subject is again taught by which they may try for a passing grade of 70. In cases of a

study extending over two or more terms the student, if he has an average of 55 per cent. may be allowed to continue with his class, but must finally make a grade of 70 per cent. in **one special examination** in each term. If he falls below 55 per cent. in average at the end of a term he will be dropped from the class and be required to take a lower subject.

Students who, by reason of protracted illness, shall be absent for as much as two-fifths of the term, shall be entitled to a special examination on the work done during the time of their absence.

All recitations missed, whether the absence be excused or not, shall be made up at the earliest convenience of the professor in charge. Unexcused absences are met with severe discipline.

Any student who shall have a term standing of 90 per cent. may be exempted from examination and his term standing shall be his term average.

RULES FOR SENIOR STANDING.

No student shall be registered as a Senior in the Fall or any other term whose work is not complete up to the time of registration, but shall be classified according to his lowest study.

No student shall be eligible for graduation at the following commencement who has at the beginning of the Winter term more than fifteen hours' work a week still to do; said work must be taken in class during the Winter and Spring terms, except that the student may make up within two weeks after the beginning of the Winter or Spring terms any deficiencies arising in the preceding term.

Discipline.—There are no printed rules. Students are expected to deport themselves as ladies and gentlemen.

While classroom standing is the supreme test of the student's character, the Faculty takes a personal interest in each student, seeking for his highest discipline, physically and morally, as well as mentally.

The moral tone of the College is so high that anyone transgressing the commonly accepted laws of good behavior finds himself an outcast among the students unless reformation is prompt and permanent.

Athletics.—The Faculty believes in a systematic government of athletics. Manly conduct is demanded in sports as well as elsewhere in college life. A certain high grade of proficiency in the classroom is required for recognition in athletics. The new Gymnasium is in charge of a competent director.

Leaving College.—Temporary leave of absence from the College must be obtained from the President. Final separation from College must be acted upon by the Faculty.

Degrees.—Upon those who complete the work of any of the eight courses in a satisfactory manner, the State Board of Agriculture, upon recommendation of the Faculty of Instruction, confers the degree of Bachelor of Science.

Students who complete the Commercial course will receive a diploma.

On those who already have the degree of Bachelor of Science the degree of Master of Science will be conferred on the completion of a course of study which has been accepted by and been under the direction of the Faculty. The course must extend through two years and should include one major and two minor lines of work. The course of work should be accepted as early as October. The subject of the thesis presented should be selected by December, and the thesis itself, which should show power of independent investigation, presented by May 1st, preceding commencement.

The degree of Civil or Mechanical Engineer will be conferred on similar conditions and for a similar amount of technical work, which must also show the possession of experience on the part of the applicant.

Expenses.—TUITION IN ALL THE REGULAR AND SPECIAL CLASSES OF THE COLLEGE IS FREE. There is no charge of any kind for material used in the laboratory work or for books taken from the College Library. An entrance fee of three dollars will be required of every student. This will be remitted and passed over to the Athletic Association, upon the written statement of the Secretary of this association that the student has become an active member of the association.

*Two boarding clubs, the membership of each being about forty, have been organized and are managed by the students. The management of these clubs is so successful and economical that it suggests the desirability of other organizations of the same character. In this manner board may be obtained at \$2.75 per week. Well furnished rooms, lighted, heated, and cared for, may be had at \$1.00 per week.

Students can secure lodging and board in excellent private families at from \$4.00 to \$4.50 per week.

The College authorities are gratified to be able to announce that many of the best homes of Fort Collins are thus opened to students at reasonable rates. No one can estimate the influence of home life thus afforded the young student who is away from home for the first time.

To those who desire to board themselves ample and reasonable opportunities are afforded.

The College is an employer of student labor to a limited extent. In the year just closed our students received \$4,300 in payment for work done on the College grounds. It is the policy of those in charge of the different forms of College work to favor students whenever labor service is needed. The best qualified and most willing have the preference if more service is offered than is required.

Fort Collins is a temperance town, absolutely free from the evils that so often beset students with alluring temptations.

Its church privileges are many and of the most refining and helpful quality. While students are not required to report church attendance, they are encouraged to cultivate the religious side of their natures. An afternoon service is held at the College every Sunday.

Military Drill.—All male students are required to procure a uniform immediately after registration, costing about \$15.00, and to drill three hours each week. This, of itself, is a training in physical bearing and a discipline leading to promptness and obedience. The ladies have a daily drill in physical culture. Opportunities are afforded during the year for a public exhibition of physical culture.

*San Juan Club, page 133.

*Grubb Club, page 134.

Seniors are not required to take military drill.

The end in view in establishing the Agricultural College was to train the heart, the head and the hand—the trinity of the new education. To make practical men and women for the work world, in field, shop, office and home; to make energetic, patriotic citizens; through its Faculty and students to develop the best resources of this great commonwealth.

REGISTER OF STUDENTS AND GRADUATES

GRADUATE STUDENTS.

Albert, Anna B., A. B., Library Science.....Longmont, Colorado
Richardson, Robert E., B. S., Civil Engineering.....
.....Grand Junction, Colorado
Stannard, Glynn B., B. S., Agriculture.....Denver, Colorado
Stuver, Emma N., B. S., Domestic Science.Fort Collins, Colorado

*SENIOR CLASS.

Morgan, William J.....Aledo, Illinois
Mulder, Peter J.....Colorado Springs, Colorado
Todd, Ralph W.....Grand Junction, Colorado
Tuttle, Anna M.....Boulder, Colorado

JUNIOR CLASS.

Cooper, Robert.....New Windsor, Colorado
Counter, James C.....Brighton, Colorado
Douthitt, Stephen.....Montrose, Colorado
Fisk, Alexander.....Colorado Springs, Colorado
Garbutt, Edna.....Fort Collins, Colorado
Gilbert, Louis.....Fowler, Colorado
Girardet, James J.....Delta, Colorado
Iddings, Edward J.....Peru, Indiana
Kingman, Harry E.....Grand Junction, Colorado
Mathias, Bert M.....Monte Vista, Colorado
Neel, George.....Greeley, Colorado
Putnam, W. L.....Orchard, Colorado
Riddell, Earle P.....Denver, Colorado
Riddell, Harvey W.....Denver, Colorado
Rosenberger, G. W.....Oakland, California
Snively, Littell.....Goes, Ohio
Weldon, George P.....Loveland, Colorado

SOPHOMORE CLASS.

Adams, Otto V.....Fort Collins, Colorado

*No regular Senior Class on account of change in courses of study made three years ago.

Akins, Fred W.....	Humansville, Missouri
Batten, Albert.....	Denver, Colorado
Birkhahn, Jacques.....	New York City
Counter, Benjamin F.....	Brighton, Colorado
East, James H.....	Denver, Colorado
Giller, Henry M.....	Whitehall, Illinois
Harris, William A.....	Basalt, Colorado
Morehouse, Arthur.....	Lamar, Colorado
Olson, Clarence.....	Yampa, Colorado
Petty, Fred L.....	Curtis, Nebraska
Phelps, Harvey J.....	Fowler, Colorado
Smith, Aubrey B.....	Grand Junction, Colorado
Snow, Bert A.....	Canon City, Colorado
Spitzer, Ray C.....	Fort Collins, Colorado
Sylvester, J. J.....	Monte Vista, Colorado
Thomas, John L.....	Georgetown, Colorado
Wilson, Harley F.....	Victor, Colorado

FRESHMAN CLASS.

Anderson, Alfred A.....	Columbus, Nebraska
Anderson, Arthur.....	Kokomo, Colorado
Ayres, T. W.....	Fort Collins, Colorado
Ayres, Vernon.....	Fort Collins, Colorado
Bice, Eugene.....	Wellsville, Kansas
Bloomfield, A. J.....	Meeker, Colorado
Burke, Edgar.....	Imperial, Nebraska
Cash, Cornelia.....	Fort Collins, Colorado
Chase, Alfred E.....	Fort Morgan, Colorado
Chambers, Gerald S.....	Greeley, Colorado
Cole, Waldo C.....	Cripple Creek, Colorado
Collins, Arthur B.....	Wellsville, Kansas
Cross, Albert.....	Loveland, Colorado
Davis, Clifford E.....	Longmont, Colorado
Earl, Frank J.....	Fort Collins, Colorado
Fritzlan, Homer.....	Parachute, Colorado
Goldhammer, Max.....	Denver, Colorado
Gooding, Ira J.....	Box Elder, Colorado
Gray, William J.....	Fort Collins, Colorado
Graves, George W.....	Bloomfield, Colorado
Guthrey, Samuel E.....	Denver, Colorado

Hall, Frank P.....	Fort Collins, Colorado
Henderson, Gus.....	Glenwood Springs, Colorado
Henderson, Max.....	Denver, Colorado
Heringa, Edward.....	Arnhem, Holland
Herrick, Robert S.....	Littleton, Colorado
Hice, Roy.....	Fort Collins, Colorado
Huffman, Lillie.....	Fort Collins, Colorado
Jones, Merle R.....	Denver, Colorado
Kemp, Walter.....	Fort Collins, Colorado
Kennedy, George O.....	Monte Vista, Colorado
Kennedy, Lynn A.....	Grand Junction, Colorado
Kreutzer, George C.....	Denver, Colorado
Kulp, Mark R.....	Denver, Colorado
Leiper, John E.....	Denver, Colorado
Manny, Edward D.....	Rocky Ford, Colorado
Miller, Jay.....	Fort Collins, Colorado
Montgomery, L. M.....	Fort Collins, Colorado
McCann, Morgan.....	Central City, Colorado
McCausland, J. W.....	Denver, Colorado
McGregor, John R.....	Fort Collins, Colorado
Philips, David E.....	Denver, Colorado
Roach, David J.....	Sedalia, Colorado
Rosenberg, Karl D.....	Glenwood Springs, Colorado
Rosenberg, W. F.....	Glenwood Springs, Colorado
Roullard, Felix.....	Weiser, Idaho
Runge, W. E.....	Denver, Colorado
Sebold, John W.....	Fort Collins, Colorado
Skinner, Floyd H.....	Denver, Colorado
Smith, Irving.....	Redstone, Colorado
Stickley, Donald W.....	Leadville, Colorado
Stuver, Donald N.....	Fort Collins, Colorado
Templeton, Clifford A.....	Denver, Colorado
Thomas, Herbert.....	Milford, Delaware
Urbahns, Theodore D.....	Minden, Iowa
Warner, Harry O.....	Denver, Colorado
Wilson, Earl.....	Pueblo, Colorado

SECOND SUB-FRESHMAN CLASS.

Austin, Fred N.....	Eaton, Colorado
Bates, Arthur.....	Basalt, Colorado

Blackmer, Almon N.....	Fort Collins, Colorado
Blandin, Ethel J.....	Eaton, Colorado
Cannon, Richard.....	Valparaiso, Chile
Casey, Alfred B.....	Fort Collins, Colorado
Davis, Bertie L.....	Fort Collins, Colorado
Davis, Dalton.....	Fort Collins, Colorado
Ehrler, Theodore.....	Denver, Colorado
Farnsworth, Nathaniel.....	Eaton, Colorado
Farr, Roscoe.....	Eaton, Colorado
Ferrin, Stanley.....	Delta, Colorado
Fulton, Harry.....	Pueblo, Colorado
Grant, Wallace S.....	Avondale, Colorado
Gray, C. Annabel.....	Fort Collins, Colorado
Gross, John L.....	Creede, Colorado
Grubb, Florence J.....	Carbondale, Colorado
Hanby, Claude L.....	La Junta, Colorado
Harkins, Henry A.....	Divide, Colorado
Harris, Arthur B.....	Fort Collins, Colorado
Harris, G. Elton.....	Fort Collins, Colorado
Hayes, Margaret G.....	Walden, Colorado
Heckart, Flossie.....	Fort Collins, Colorado
Hibbs, Carl W.....	Grand Junction, Colorado
Hinkle, Elenora.....	Fortesque, New Mexico
Hutchinson, W. Carl.....	Divide, Colorado
Kelker, Harry C.....	Glenwood Springs, Colorado
Kennedy, R. J.....	Falcon, Colorado
Killgore, Lloyd.....	Fort Collins, Colorado
King, Harry C.....	Steamboat Springs, Colorado
Kouns, Alvin.....	Rocky Ford, Colorado
Kulmley, Lester.....	Delta, Colorado
Larsen, Elsie.....	Fort Collins, Colorado
Littler, Ralph E.....	Livermore, Colorado
Mangun, Ira.....	Fort Collins, Colorado
Merchant, John L.....	Mitchell, Nebraska
Morrison, Mark S.....	Denver, Colorado
McClair, Herbert E.....	Deuel, Colorado
McCormick, John.....	Eaton, Colorado
McMillan, Charles.....	Fort Collins, Colorado
McPherson, Charles.....	Holly, Colorado

McRobbie, John S.....	Leadville, Colorado
Nelson, Clinton.....	Loveland, Colorado
Nelson, Emily.....	Hooper, Nebraska
Norgaard, Ejnar.....	Gypsum, Colorado
Officer, Charles C.....	Cleburne, Texas
Partridge, Ralph L.....	Fort Collins, Colorado
Patterson, Wayne B.....	Greeley, Colorado
Phelps, Guy E.....	Fowler, Colorado
Potts, Harry L.....	Littleton, Colorado
Rickel, Burton F.....	Denver, Colorado
Ross, Evelyn.....	Platteville, Colorado
Roullard, Fred P.....	Weiser, Idaho
Severance, Mary A.....	Eaton, Colorado
Singleton, Harry.....	Delta, Colorado
Sopp, Francis.....	Silver Plume, Colorado
Stidd, E. N.....	Pitkin, Colorado
Stuver, Dean.....	Fort Collins, Colorado
Tanner, Munson A.....	Florence, Colorado
Tedmon, Allyn H.....	New York City
Tedmon, Bob S.....	New York City
Towan, William J.....	Silver Plume, Colorado
VanSickle, Rex.....	Fort Collins, Colorado
Watts, Ira.....	Fort Collins, Colorado
Wolf, Oscar A.....	Fort Collins, Colorado
Wood, Clarence M.....	Denver, Colorado

FIRST SUB-FRESHMAN CLASS.

Anderson, Buna C.....	Fort Collins, Colorado
Anderson, Laura.....	Fountain, Colorado
Ashby, Joe H.....	Larkspur, Colorado
Austin, Nathaniel E.....	Eaton, Colorado
Ayres, Lena.....	Fort Collins, Colorado
Bartlett, Chenry C.....	Boulder, Colorado
Beffort, Xaver.....	Rico, Colorado
Behrens, Bernard E.....	Denver, Colorado
Bein, Arthur.....	Berthoud, Colorado
Best, W. T.....	La Junta, Colorado
Blake, Arthur L.....	Eaton, Colorado
Blunck, Viola.....	Fort Collins, Colorado
Bovee, Manly G.....	Rocky Ford, Colorado

Brown, Lorain.....	Colorado Springs, Colorado
Burnett, Paul.....	Denver, Colorado
Casey, Rose E.....	Fort Collins, Colorado
Casey, Roy J.....	Fort Collins, Colorado
Casey, William G.....	Fort Collins, Colorado
Coak, George C.....	Bloomfield, Colorado
Collins, Frank.....	Fort Collins, Colorado
Couch, Edmond.....	Littleton, Colorado
Currie, William.....	Fort Collins, Colorado
Cutler, Atwood A.....	Carthage, Illinois
Davis, George.....	Haywood, Colorado
Davis, Lela F.....	Fort Collins, Colorado
Egan, Paul H.....	Denver, Colorado
Edgar, Ellis M.....	Greeley, Colorado
Edgar, John M.....	Greeley, Colorado
Emerson, Luella F.....	Fort Collins, Colorado
Emerson, William E.....	Fort Collins, Colorado
Emery, Eldora.....	Fort Collins, Colorado
Everett, Edward.....	Glenwood Springs, Colorado
Fink, Francis L.....	Colorado Springs, Colorado
Finney, John C.....	Center, Colorado
Franks, Risdon.....	Fort Collins, Colorado
Frey, Louis C.....	Pueblo, Colorado
Friend, Harry.....	Pitkin, Colorado
Gephardt, Henry B.....	Kanorado, Kansas
Gooch, Ernest C.....	Loveland, Colorado
Hamilton, Alexander B.....	Loveland, Colorado
Harburgh, Emil.....	Denver, Colorado
Harmon, Henry F.....	Boulder, Colorado
Harrod, Eugene.....	Fort Collins, Colorado
Hartman, Bruce A.....	Gunnison, Colorado
Helm, Glenn B.....	Rifle, Colorado
Hermann, August A.....	Harmon, Colorado
Horn, Walter.....	Rifle, Colorado
Hubbard, Milton J.....	Leadville, Colorado
Hurt, Thomas C.....	Center, Colorado
Ianson, Mabel.....	Fort Collins, Colorado
Ingalls, Harry E.....	Sugar City, Colorado
Ivers, Elmer M.....	Loveland, Colorado
Johnson, Alfred.....	Meeker, Colorado

Kern, Harry F.....	Timnath, Colorado
Kerns, Oliver D.....	Bellvue, Colorado
Kerr, Robert T.....	Hermosa, Colorado
Koenig, Arthur.....	New Windsor, Colorado
Lamborn, Rollan J.....	Deuel, Colorado
Lane, Barton E.....	Laporte, Colorado
Larson, Alfred.....	Hahn's Peak, Colorado
Latimer, Will G.....	Fort Collins, Colorado
Levy, Ralph.....	Walsenburg, Colorado
Lingren, Harry A.....	Cedaredge, Colorado
Lyon, Charles R.....	La Junta, Colorado
Manhart, George H.....	Sedalia, Colorado
Mason, Roy.....	Gunnison, Colorado
Meyer, Albert.....	Fort Collins, Colorado
Mickelson, Adolph B.....	Rocky Ford, Colorado
Milburn, Leroy L.....	Berthoud, Colorado
Millspaugh, Gordon A.....	Gunnison, Colorado
Monninger, Harley N.....	Fort Collins, Colorado
Morrison, M. Clair.....	Butte City, Montana
Murray, Frank J.....	Fort Collins, Colorado
Myrer, William A.....	Denver, Colorado
McCarthy, Annie.....	Carbondale, Colorado
McCurdy, Charles A.....	Bellvue, Colorado
McGinness, Arthur R.....	Bellvue, Colorado
McLaughlin, Matthew.....	Rifle, Colorado
McWilliams, Thomas.....	Eaton, Colorado
Needham, Guy.....	Carbondale, Colorado
Needham, Jesse L.....	Carbondale, Colorado
Neel, Homer.....	Eaton, Colorado
Nichols, Paul A.....	Henderson, Colorado
Nock, Ben E.....	Denver, Colorado
Nogal, Arthur E.....	Eagle, Colorado
Nurnburg, Mabel.....	Carbondale, Colorado
O'Laughlin, Leo.....	Fort Collins, Colorado
Olson, H. Dale.....	Yampa, Colorado
Ormond, Thomas.....	La Jara, Colorado
Pease, Glen R.....	Fort Collins, Colorado
Pence, Adolphus.....	Fort Collins, Colorado
Petty, Ruth.....	Curtis, Nebraska

Pierce, Harry.....	Fort Collins, Colorado
Pilcher, Laura M.....	Fort Collins, Colorado
Polhamus, Roy F.....	Fort Collins, Colorado
Porter, Nina P.....	Fort Collins, Colorado
Prendergast, James S.....	Fort Collins, Colorado
Randall, John L.....	Fort Collins, Colorado
Reaugh, Hattie F.....	Fort Collins, Colorado
Riddell, Warren S.....	Denver, Colorado
Roach, Anna B.....	Sedalia, Colorado
Robinson, Mamie.....	Fort Collins, Colorado
Ross, Margaret.....	Platteville, Colorado
Ruthven, Belle.....	Loveland, Colorado
Ruthven, Elsie.....	Loveland, Colorado
Salisbury, Earl.....	Slatter, Colorado
Sanchez, Joseph.....	Walsenburg, Colorado
Scott, Frank P.....	Nederland, Colorado
Sholine, Louis E.....	Fort Collins, Colorado
Smith, Lloyd F.....	Grand Junction, Colorado
Stidd, Lee C.....	Pitkin, Colorado
Straub, Arthur G.....	Denver, Colorado
Stryker, William W.....	Montrose, Colorado
Tandy, Arthur A.....	Eagle, Colorado
Thompson, Clarence.....	Berthoud, Colorado
Thronsdon, Dorothy.....	Longmont, Colorado
Timberlake, Charles.....	Basalt, Colorado
Trevathan, Gertrude.....	Gunnison, Colorado
Tucker, Frank.....	Fort Collins, Colorado
Tuttle, M. Charlotte.....	Boulder, Colorado
Van Dolah, Parks B.....	Victor, Colorado
Van Pelt, George.....	Danbury, Nebraska
Van Sickle, Irma.....	Fort Collins, Colorado
Watters, Earl E.....	Rocky Ford, Colorado
Watts, Emery E.....	Bakersfield, Colorado
Westfall, Earl E.....	Glenwood Springs, Colorado
Willburn, Sidney.....	Gardner, Colorado
Wolf, Robert.....	Fort Collins, Colorado
Wolverton, George W.....	Glenwood Springs, Colorado
Wright, Edward K.....	Redstone, Colorado
Zieser, Lizzie.....	Fort Collins, Colorado

SENIOR CLASS—COMMERCIAL COURSE.

Chatfield, Adaline.....	Littleton, Colorado
Cleave, Virginia.....	Estes Park, Colorado
Cuthbertson, Helen.....	Fort Collins, Colorado
Giger, Minnie.....	Deuel, Colorado
Hubbard, Gladys.....	Longmont, Colorado
Jacobs, Emily A.....	Fort Collins, Colorado
Payne, Clinton B.....	Littleton, Colorado
Payne, Irvén.....	Littleton, Colorado
Stebbins, Florence.....	Shelton, Nebraska
Woods, Edmond P.....	Farmington, New Mexico

JUNIOR CLASS—COMMERCIAL COURSE.

Abbott, Minnie A.....	Burlington, Colorado
Aikin, Mary E.....	Befrontin, Ohio
Chatfield, Ray E.....	Gypsum, Colorado
Christman, Carl C.....	Virginia Dale, Colorado
Day, Charles W.....	Masters, Colorado
Dykeman, Maude.....	Fort Collins, Colorado
Fobes, Anna G.....	Virginia Dale, Colorado
Green, Albert G.....	Eagle, Wisconsin
Hamilton, James M.....	Steamboat Springs, Colorado
Hamilton, Martin.....	Longmont, Colorado
Hinkle, Euretha G.....	Fortesque, New Mexico
Harris, Nettie.....	Carbondale, Colorado
Hoskin, Edna E.....	Burlington, Colorado
Hutton, S. W.....	Grand Junction, Colorado
Jay, Rodney.....	Grand Junction, Colorado
Klingler, Coy E.....	Grand Junction, Colorado
Lamb, Luther C.....	Fort Collins, Colorado
Laughlin, Arthur R.....	Fort Collins, Colorado
Orr, Lillian A.....	Greeley, Colorado
Rist, Rodney.....	Fort Collins, Colorado
Roller, Nellie.....	Fort Collins, Colorado
Sanchez, Manuel.....	Walsenburg, Colorado
Sargisson, Minnie.....	Fort Collins, Colorado
Schwalm, Harry.....	New Windsor, Colorado
Strachan, James A.....	Fort Collins, Colorado

Swink, Claude.....	Rocky Ford, Colorado
Yersin, Henry W.....	Burlington, Colorado

NORMAL DOMESTIC SCIENCE COURSE.

Senior Class.

Harris, Mabelle.....	Fort Collins, Colorado
Kendall, Alice P.....	La Junta, Colorado
McGuire, Grace A.....	Oswego, Kansas

Junior Class.

Allen, Blanche E.....	Fort Collins, Colorado
Rowell, Maud A.....	Longmont, Colorado
Walker, Maude.....	Fort Collins, Colorado
Wiley, Aurilla A.....	Denver, Colorado

UNCLASSIFIED STUDENTS.

Alford, Anna H.....	Fort Collins, Colorado
Amoss, Reba.....	Loveland, Colorado
Anderson, Nora.....	Loveland, Colorado
Annis, Lorna E.....	Fort Collins, Colorado
Babcock, Orvill G.....	University Park, Colorado
Christiansen, Gertrude.....	Fort Collins, Colorado
Coumbe, Ned.....	Julesburg, Colorado
Fuller, Robert K.....	Fort Collins, Colorado
Fullerton, Nora M.....	Fort Collins, Colorado
Gall, D. Emerson.....	Reserve, Kansas
Godfrey, Mrs. A. E.....	Fort Collins, Colorado
Goodale, Rolland C.....	Lamar, Colorado
Gray, Ross C.....	Granada, Colorado
Gum, Francis.....	Frankford, Delaware
Hambitzer, Catharine.....	Fort Collins, Colorado
Headden, Margaret.....	Fort Collins, Colorado
Killgore, Perry.....	Fort Collins, Colorado
Laughlin, Ethel M.....	Fort Collins, Colorado
Miller, Corwin E.....	Peru, Indiana
Miller, Nora R.....	Fort Collins, Colorado
McLearn, Herbert.....	Rifle, Colorado
Norvell, Clyde W.....	Fort Collins, Colorado
Pease, Laura E.....	Broomfield, Colorado

Penley, George L.....	Sedalia, Colorado
Prein, Otto L.....	Phoenix, Arizona
Skinner, Amelia.....	Fort Collins, Colorado
Stults, Clinton B.....	Boulder, Colorado
Thistle, John O.....	Fort Collins, Colorado
Thomas, Marcia.....	Fort Collins, Colorado
Van Wagenen, Kenneth D.....	Denver, Colorado
Warneke, Edna.....	Harrison, Nebraska
Warneke, Mabelle.....	Harrison, Nebraska
Wisner, Scott.....	Onega, Nebraska
Wood, Emily W.....	Fort Collins, Colorado
Woodhurst, Charles J.....	Fort Collins, Colorado
Worthington, Jesse K.....	St. Louis, Missouri
Yamanaka, Willie M.....	Hiroshinnan, Japan

SPECIAL STUDENTS.

Bice, Cora, Domestic Science.....	Wellsville, Kansas
Oldfield, Bessie, Commercial.....	Fort Collins, Colorado

STUDENTS ENROLLED FOR FARMERS' SHORT COURSE— 1905.

Adams, M. F.....	Fort Collins, Colorado
Ames, Hugh.....	Walden, Colorado
Anderson, Peter.....	Fort Collins, Colorado
Andrews, Robert J.....	Fort Collins, Colorado
*Ayres, Vernon.....	Fort Collins, Colorado
*Ayres, W. J.....	Fort Collins, Colorado
*Babcock, O. G.....	University Park, Colorado
Baker, W. B.....	Fort Collins, Colorado
Bartlett, W. C.....	Gunnison, Colorado
Benck, F. A.....	Agate, Colorado
Benck, H. O.....	Agate, Colorado
*Beffort, Xaver.....	Rico, Colorado
Bert, W. F.....	Lamar, Colorado
Bice, E. S.....	Fort Collins, Colorado
Blinn, P. K.....	Rocky Ford, Colorado
Bliss, A. R.....	Greeley, Colorado
*Bloomfield, A. J.....	Meeker, Colorado
Bumpus, Edwin.....	Fort Collins, Colorado
Bumstead, E. S.....	Fort Collins, Colorado

Butorff, J. Bard.....	Fort Collins, Colorado
Butts, A. H.....	Fort Collins, Colorado
Cave, H. Bert.....	Fort Collins, Colorado
*Chace, Alfred E.....	Fort Morgan, Colorado
Collins, J. M.....	Fort Collins, Colorado
Copeland, A. B.....	Greeley, Colorado
Cornelius, J. T.....	Evans, Colorado
Cornforth, A. G.....	Elbert, Colorado
Coy, J. E.....	Fort Collins, Colorado
Cross, John.....	Loveland, Colorado
Davis, W. R.....	Fort Morgan, Colorado
*Douthitt, Stephen.....	Montrose, Colorado
Elder, W. P.....	Fort Collins, Colorado
Ely, W. A.....	Boulder, Colorado
Evans, B. F.....	Fort Collins, Colorado
*Fisk, Alexander J.....	Colorado Springs, Colorado
Gillaspey, W. A.....	Gunnison, Colorado
Gordon, R. M.....	Fort Collins, Colorado
*Graves, George M.....	Bloomfield, Colorado
Griffin, H. H.....	Fort Collins, Colorado
Griswold, A. H.....	Fort Collins, Colorado
Grattan, John.....	Barr, Colorado
Harmon, E. D.....	Boulder, Colorado
Hartsel, Samuel.....	Hartsel, Colorado
Haynes, R. W.....	Fort Lupton, Colorado
Heckart, H. L.....	Virginia Dale, Colorado
Henry, H. C.....	Fort Logan, Colorado
*Herringa, Edward.....	Arnhem, Holland
*Hice, Roy.....	Fort Collins, Colorado
Huleatt, P. A.....	Loveland, Colorado
Johnson, W. C.....	Fort Collins, Colorado
Kimzey, J. A.....	Evans, Colorado
*Kingman, W. J.....	Boulder, Colorado
Kitchell, A.....	Fort Collins, Colorado
Kemmerer, J. J.....	Deuel, Colorado
Laughlin, John.....	Evans, Colorado
Liggett, C. M.....	Fort Collins, Colorado
Littler, E. C.....	Livermore, Colorado
Long, W. W.....	Wellington, Colorado

Lowry, J. M.....	Alford, Colorado
Madden, F.	_____
Maxfield, Richard A.....	Bellvue, Colorado
Marshall, Edwin.....	Fort Collins, Colorado
Matthews, F. A.....	Fort Collins, Colorado
Maxwell, R. S.....	Fort Collins, Colorado
McAllister, G. W.....	Fort Collins, Colorado
McCaughey, ——.....	Granite, Colorado
Miller, H. H.....	Fort Collins, Colorado
*Miller, N. J.....	Fort Collins, Colorado
Mills, J. B.....	Littleton, Colorado
*Montgomery, L. M.....	Fort Collins, Colorado
Moore, Charles.....	Eaton, Colorado
Moore, Crawford.....	Yuma, Colorado
Moore, Fred.....	Eaton, Colorado
Nurnburg, E. G.....	Carbondale, Colorado
Oliver, George.....	Eaton, Colorado
Osborne, C. F.....	Loveland, Colorado
Osborne, W.....	Loveland, Colorado
Owens, J. R.....	Laveta, Colorado
Owens, W. R.....	Laveta, Colorado
Parfet, C. E.....	Golden, Colorado
Quick, L. D.....	Fort Collins, Colorado
Richart, William.....	Fort Collins, Colorado
Ricketts, R. M.....	Fort Collins, Colorado
Riedel, C. A.....	Montrose, Colorado
*Rosenberger, G. W.....	Oakland, California
Sager, H. B.....	Laveta, Colorado
Sewell, F. E.....	Carbondale, Colorado
Slater, G. H.....	Como, Colorado
*Stannard, Glynn.....	Denver, Colorado
Stever, W. R.....	Wellington, Colorado
Stewart, John.....	Troublesome, Colorado
Stickley, Don W.....	Leadville, Colorado
Stiles, W. C.....	Loveland, Colorado
Sweet, F. E.....	Carbondale, Colorado
Smylie, F. W.....	Masters, Colorado
*Stultz, C. L.....	Boulder, Colorado
Tenney, R. Q.....	Fort Collins, Colorado

Turner, Miss Martha.....	Denver, Colorado
*Urbahms, Theodore.....	Minden, Iowa
Underwood, O. B.....	Fort Collins, Colorado
Weems, M. K.....	Quincy, Ill.
Welles, J. C.....	Glendive, Colorado
*Wisner, Scott.....	Omega, Nebraska
Yoder, C. C.....	Fort Collins, Colorado
Zenor, Perry.....	Fort Collins, Colorado

SUMMARY.

	Male.	Female.	Total.
Post Graduate	2	2	4
Senior	3	1	4
(No Senior class owing to change in course.)			
Junior	16	1	17
Sophomore	18	..	18
Freshman	55	2	57
Senior Commercial	3	7	10
(Sophomore rank.)			
Junior Commercial	17	10	27
(Freshman rank.)			
Senior, Domestic Science Normal.....	..	3	3
(Sophomore rank.)			
Junior, Domestic Science Normal.....	..	4	4
(Freshman rank.)			
Second Sub-Freshman	55	11	66
First Sub-Freshman	105	26	131
Unclassified	20	17	37
Special	1	1	2
	—	—	—
Totals	295	85	380
Farmers' Short Course.....	104	1	105
Duplicates	19	..	19
	—	—	—
Total, no name counted twice.....	85	1	86

*Regular course students registered for Short Course in addition.

GRADUATES

- Albert M. Ten Eyck, M. S., 1897 (B. Agr. University of Wisconsin, 1893), Agriculturist, State Agricultural College
Manhattan, Kansas
- Carl H. Potter, M. S., 1899 (B. S. University of Wisconsin, 1892), Assistant in Horticulture and Botany, Agricultural College of Colorado, 1899-1901, Horticulturist; deceased, 1902.
- James W. Lawrence, B. S. (M. E., 1902), Professor of Mechanical Engineering, State Agricultural College.....
Fort Collins, Colorado

1884.

- George H. Glover, B. S. (M. S., 1902) (D. V. M., Iowa Agricultural College), Professor of Veterinary Science, Agricultural College of Colorado.....Fort Collins, Colorado
- Elizabeth Coy, B. S. (Mrs. James W. Lawrence).....
Fort Collins, Colorado
- Leonidas Loomis, B. S., Stockman.....Fort Collins, Colorado

1885.

- Cora Bell Blinn, B. S.....Rocky Ford, Colorado
- Edna L. Hice, B. S.....Fort Collins, Colorado
- Lelia L. Loomis, B. S. (Mrs. T. H. Robertson).....
Fort Collins, Colorado
- Grace Espy Patton, B. S. (M. S., 1897) (Mrs. W. H. Cowles), Journalist; deceased, 1904.....Denver, Colorado
- Robert E. Trimble, B. S., Assistant Meteorologist and Irrigation Engineer, Experiment Station, Agricultural College of Colorado.....Fort Collins, Colorado
- Helen White, B. S. (Mrs John Rigden).....Timnath, Colorado.

1886.

- Wilbert J. Sickman, B. S., Clerk of the District Court of Larimer County, Colorado; deceased, 1896.

1887.

- Eleanor F. Gill, B. S. (Mrs. William Frazer).....
Black Hawk, Colorado
- Marguerite E. Stratton, B. S., Librarian Agricultural College of Colorado, 1895-1901; deceased, 1901.

- Lerah G. Stratton, B. S. (Mrs. P. J. McHugh).....
Fort Collins, Colorado
 Edwin G. Nettleton, B. S., Assistant Engineer Sonora and
 Sinaloa Canal, Mexico, 1893; deceased.

1888.

- Lewis A. Coffin, B. S., Miner.....Carbon, Colorado
 Harvey H. Griffin, B. S., Agriculturist, Fort Collins Sugar
 Company.....Fort Collins, Colorado
 Josephine Lee, B. S., Principal Teacher, City Schools.....
Boulder, Colorado
 Jennie E. McLain, B. S. (Mrs. H. R. Corbett)...Chicago, Illinois

1889.

- Lucy Bell, B. S. (Mrs. C. V. Benson).....Fort Collins, Colorado
 Arthur L. Davis, B. S. (M. D., 1895, Gross Medical College,
 Denver, Graduate Eye, Ear, Nose and Throat Medical
 College of Chicago, 1900); Physician.....Durango, Colorado

1890.

- Clarence V. Benson, B. S. (LL. B., University of Michigan,
 1892; M. S., Agricultural College of Colorado, 1896);
 County Judge, Larimer County.....Fort Collins, Colorado
 Velma V. Benson, B. S., (Mrs. A. Beebe)..Fort Collins, Colorado
 Burt C. Buffum, B. S. (M. S., 1893), Professor of Agriculture
 and Director of the Experiment Station, University of
 Wyoming Laramie, Wyoming
 Charles A. Duncan, B. S., Farmer.....Timnath, Colorado
 Newton C. Garbutt, B. S., Attorney-at-Law..Ft. Collins, Colorado
 Helen E. Lunn, B. S. (Mrs. T. J. Montgomery); deceased, 1904.
Fort Collins, Colorado
 Harry R. Temple, B. S., Engineer, Boulder Flour Mill and
 Elevator Company.....Boulder, Colorado
 Cora B. Thoman, B. S. (Mrs. Clarence Jarbeau).....
Georgetown, Colorado
 Mary L. Weaver, B. S. (Ph. B., Ohio State University) Urban, O.

1891.

- John S. Calkins, B. S., Farmer and Stockman...Harris, Colorado
 Charles R. Evans, B. S., Stockman and Fruit Grower.....
Fort Collins, Colorado
 Minnie E. McLain, B. S., Teacher.....Loveland, Colorado

1892.

- Charles W. Beach, B. S. (B. S. University of Illinois, 1894),
Civil Engineer.....Las Animas, Colorado
- Frank Beach, B. S. (M. S. 1896), Lumber Merchant.....
.....Fort Collins, Colorado
- Alice Bell, B. S. (Mrs. S. L. Boothroyd).....Ithaca, N. Y.
- Samuel Bell, B. S. (M. B., University of Denver, 1896), Physi-
cian.....Meekeer, Colorado
- Don A. Carpenter, B. S., Southwestern Manager Sullivan Ma-
chinery Company.....El Paso, Texas
- Porter J. Preston, B. S., Deputy State Engineer.Denver, Colorado
- Albert J. Sedgwick, B. S., Journalist.....Toledo, Ohio
- Lewis L. Stimson, B. S., County Surveyor Weld County....
.....Greeley, Colorado
- Frank H. Thompson, B. S., Assistant General Agent, Pacific
Mutual Life Insurance Company.....Denver, Colorado

1893.

- John D. Bloomfield, B. S., Cashier Citizens' State Bank.....
.....Nampa, Idaho
- Samuel L. Boothroyd, B. S. (M. S., 1904), Instructor, Depart-
ment of Physics Cornell University.....Ithaca, New York
- Ida M. Lewis, B. S. (Mrs. J. T. Douglass); deceased, 1894.
- Charles J. Gilkison, B. S., Farmer and Shipper.....
.....Fort Collins, Colorado
- William J. Ralph, B. S., Bank Clerk.....Fort Collins, Colorado
- Raymond F. Walter, B. S., Engineer for South Dakota U. S.
Reclamation Service.....Denver, Colorado
- William W. Willard, B. S., Merchant.....Twin Lakes, Colorado

1894.

- Philo K. Blinn, B. S., Superintendent Arkansas Valley Sub-
Station.....Rocky Ford, Colorado
- Jacob H. Cowan, B. S. (B. Agr. Cornell University, 1899),
Professor of Botany and Horticulture, Agricultural Col-
lege of Colorado, 1900; deceased, 1900.
- Will H. Fairfield, B. S. (M. S., 1898), Experimentalist, Cana-
dian-Northwestern Irrigation Company.....
.....Lethbridge, Alberta, Canada

Minnie F. Harrington, B. S. (Mrs. W. F. Gilkison).....
Laramie, Wyoming
 Herbert S. Kendall, Merchant.....Denver, Colorado
 Celia May Southworth, B. S. (Mrs. Frank Beach).....
Fort Collins, Colorado
 Harlan Thomas, B. S., Member State Board of Agriculture of
 Colorado, Architect..412 Boston Building, Denver, Colorado

1895.

Jean B. Balcomb, B. S., Mining Engineer...Palo Alto, California
 Herbert A. Black, B. S., Manager Brooks Lumber Company..
Fort Collins, Colorado
 Edith G. Boothroyd, B. S. (Mrs. Ogilvy).....Arkins, Colorado
 Henry A. Calkins, B. S. (M. D., Denver College of Medicine,
 1901), Physician.....Denver, Colorado
 Edward P. Cooke, B. S., Money Clerk, United States and Pa-
 cific Express Companies.....Des Moines, Iowa
 Loren B. Curtis, B. S., Assistant Constructing Engineer for
 Denver Tramway Company.....Denver, Colorado
 William F. Gilkison, B. S. (M. E., 1898), Professor of Me-
 chanical Engineering University of Wyoming.....
Laramie, Wyoming
 Ella G. Goldsborough, B. S. (Mrs. E. C. Reed).....
Fort Collins, Colorado
 Seth C. Lewis, B. S., Farmer.....Timnath, Colorado
 Edgar A. Mead, B. S., Farmer and Stockman..Greeley, Colorado
 George W. Nelson, B. S., Farmer and Stockman.....
Denver, Colorado
 Frances C. Schelt, B. S. (Mrs. Cunningham).....
Fort Collins, Colorado
 Walter K. Starbird, B. S., Stockman.....Ault, Colorado

1896.

Fred Alford, B. S. (M. S., 1904), Assistant Chemist, Agricult-
 ural College of Colorado.....Fort Collins, Colorado
 Henry F. Alps, B. S., Observer United States Weather Bu-
 reau.....Lewiston, Idaho
 William E. Becker, B. S., Civil Engineer.....
Steamboat Springs, Colorado
 Florence J. Boothroyd, B. S. (Mrs. W. W. Hoagland).....
Omaha, Nebraska

- Alfred H. Bungardt, B. S. (M. D., 1900, University Medical College, Kansas City), Physician and Surgeon.....
Cordell, Oklahoma
 Allen P. Greenacre, B. S., Stockman.....Fort Collins, Colorado
 Robinson W. Hawley, B. S., Civil Engineer.....Robinson, Utah
 John E. Kiteley, B. S., Farmer.....Longmont, Colorado
 Richard A. Maxfield, B. S., Professor of Military Science and
 Tactics, Agricultural College of Colorado.....
Fort Collins, Colorado
 Abner S. McKee, B. S., Assayer.....
1727 Champa Street, Denver, Colorado
 Grafton S. Norman, B. S., Instructor in Mathematics and
 Agriculture, Agriculture and Mechanical College.....
Normal, Alabama
 Robert W. Sears, B. S., Stockman.....Fowler, Colorado

1897.

- May A. Dievendorf, B. S. (Mrs. Frank Miller).....
Fort Collins, Colorado
 Bertram A. Gage, B. S., Assistant Cashier, Fort Collins Na-
 tional Bank.....Fort Collins, Colorado
 Martha R. Gilkison, B. S. (Mrs. Frank Woods).....
Fort Collins, Colorado
 Robert S. Gray, B. S., Deputy Division Superintendent of
 Education.....Iligan, Philippine Islands
 Archie J. Harris, B. S., First Lieutenant Second United
 States Infantry.....Fort Riley, Kansas
 Ralph H. Hess, B. S. (M. S., 1904), Secretary to the Presi-
 dent and Manager of the Text-Book Department, Agri-
 cultural College of Colorado.....Fort Collins, Colorado
 Alta E. Lewis, B. S. (Mrs. B. H. Bush).....Livermore, Colorado
 Smith D. Philip, B. S., Superintendent, Colorado Condensed
 Milk Company.....Fort Lupton, Colorado
 Anna L. Picken, B. S. (Mrs. N. C. Warren); deceased 1901.
Fort Collins, Colorado
 Mary E. Prendergast, B. S.....Fort Collins, Colorado
 David J. Richards, B. S., Deputy Postmaster.....
Manila, Philippine Islands

1898.

- Emil Affolter, B. S., Farmer.....Longmont, Colorado

Herman S. Brown, B. S., Maintenance of Way, D. & R. G. Ry.
 Company.....Salida, Colorado
 Raymond C. Calloway, B. S., Farmer.....Bellvue, Washington
 William A. Dickens, B. S., Farmer.....Longmont, Colorado
 Jesse W. Goodwin, B. S., Machinist Atchison, Topeka &
 Santa Fe R. R.....Albuquerque, New Mexico
 Fred S. Hotchkiss, B. S., Farmer and Engineer.....
Hotchkiss, Colorado
 Amos Jones, B. S., Civil and Irrigation Engineer.....
Pueblo, Colorado
 Herbert C. Matthews, B. S., Machinist....Monte Vista, Colorado
 Bernard J. Prendergast, B. S., Manager Brighton Water
 Works.....Brighton, Colorado
 Linnie M. Rutledge, B. S., deceased, 1900.
 Charles E. Swann, B. S., Engineer Union Pacific Coal Com-
 pany.....Rock Springs, Wyoming
 Melvin D. Williams, B. S., United States Geological Survey
Ehrenburg, Arizona
 Thomas J. Warren, B. S., Warren Mercantile Company.....
Fort Collins, Colorado

1899.

Lee R. Cooke, B. S., Machinist, Kilby Construction Company
Fort Collins, Colorado
 Frank Corbin, B. S., Lumber Dealer.....Fort Collins, Colorado
 Howard E. Emigh, B. S. (M. E., 1901), Train Conductor
 Southern Pacific R. R.....Suisun, California
 Raymond R. Fisk, B. S.....Laramie, Wyoming
 Newton M. Fitch, B. S., Resident Engineer, Texas and Okla-
 homa Railroad.....Ada, Indian Territory
 Lewis C. Hall, B. S., Civil Engineer.....Canon City, Colorado
 William R. Headden, B. S., Instructor Renssalaer Institute
Troy, New York
 Herman Howard, B. S., Machinist Southern Pacific Railroad
Wadsworth, Nevada
 Addison L. Kellogg, B. S., Bookkeeper.....Denver, Colorado
 William J. Littleton, B. S.....Trinidad, Colorado
 Charles W. Mayers, B. S., Contractor.....Littleton, Colorado
 Harry C. Miller, B. S., Pharmacist.....Silverton, Colorado

Jacob C. Mulder, B. S., Provincial Supervisor, Province of Bohol.....Tagbilaran, Philippine Islands
 Charles S. Newell, B. S., Chief Inspector, Colorado Telephone Company.....Cripple Creek, Colorado
 Marguerite Prendergast, B. S., Instructor in Domestic Science, State Agricultural College.....Fort Collins, Colorado
 George A. Smith, B. S., Teacher, Monte Vista High School..
Monte Vista, Colorado
 James A. Stump, B. S., Law Student.....Ann Arbor, Michigan
 Edward S. G. Titus, B. S. (M. S., 1901), Investigator, Division of Entomology, Department of Agriculture. Washington, D. C.

1900.

Abbie C. Alford, B. S. (Mrs. R. A. Maxfield)Fort Collins, Colorado
 Laura Armstrong, B. S. (Mrs. E. S. G. Titus)..Washington, D. C.
 Clifford S. Atherly, B. S., Letter Carrier..Fort Collins, Colorado
 Clara M. Cunningham, B. S., Teacher.....Fort Collins, Colorado
 Thomas M. Donelson, B. S., Assistant Engineer, Mexican Central Railroad.....Agnas Calientes, Mexico
 Earl Douglass, B. S. (M. S., 1904), Assistant Chemist, Agricultural Experiment Station of Colorado.....
Fort Collins, Colorado
 Nellie M. Drake, B. S. (Mrs. Clyde Bartels)....Pueblo, Colorado
 Stuart B. Garbutt, B. S., Stock Clerk, Wright and Wilhelmy Company.....2512 Chicago Street, Omaha, Nebraska
 Walter P. Hurley, B. S., Druggist.....Fort Collins, Colorado
 Adolph F. Lindon, B. S., Dairy and Stock Farmer.....
Haxtum, Colorado
 Otto W. Lunnon, B. S., Electrician.....Fort Collins, Colorado
 Roy S. Lumry, B. S., deceased, 1904.....Cheyenne, Wyoming
 William F. Marshall, B. S., deceased, 1903.....Scotland
 Ray E. McClave, B. S., Farmer and Stockman.....
Platteville, Colorado
 Emmet C. McAnelly, B. S., City Engineer.....
Fort Collins, Colorado
 Dana Q. McComb, B. S., Teacher, Civil Service Commission
Manila, Philippine Islands
 Harry H. Murray, B. S., deceased, 1901....Fort Collins, Colorado
 Elizabeth H. Nugent, B. S. (Mrs. Runyan).Fort Collins, Colorado

Robert A. Pierce, B. S., Division Mine Engineer, Colorado
 Fuel and Iron Company.....Denver, Colorado
 Etta E. Richardson, B. S., Teacher.....Fort Collins, Colorado
 Ethel M. Smith, B. S.....Fort Collins, Colorado
 Edwin A. Sutton, B. S., Assistant Superintendent Colorado
 Fuel and Iron Company.....Denver, Colorado
 Pauline W. Taft, B. S.....Laporte, Colorado
 Oliver B. Tomlin, B. S., Letter Carrier....Fort Collins, Colorado
 Frances M. Warren, B. S. (Mrs. C. J. Gilkison).....
Fort Collins, Colorado
 Anna M. Wood, B. S., Stenographer.....Denver, Colorado

1901.

James H. Andrews, B. S., Stockman.....Fort Collins, Colorado
 Rolland N. Bonnett, B. S., Farmer.....Fort Collins, Colorado
 Leroy A. Baker, B. S. (M. S., 1904), Assistant Department of
 Mathematics, Agricultural College of Colorado.....
Fort Collins, Colorado
 Barton G. D. Bishop, B. S., Professor of Agriculture and Sci-
 ence Mount Morris College.....Mount Morris, Illinois
 Luther D. Cowan, B. S., Farmer.....Lasalle, Colorado
 Ralph W. Haynes, B. S., Farmer.....Fort Lupton, Colorado
 Ross D. Howard, B. S., Employe, Cambrian Iron Works....
Johnstown, Pennsylvania
 Royall S. Howlett, B. S., Teacher, Psychological Department,
 Colorado Fuel and Iron Company.....Rouse, Colorado
 Antoine Jacob, B. S., Civil Engineer.....Denver, Colorado
 Cyrus E. McComb, B. S., Telephone Inspector, The Colorado
 Telephone Company.....Fort Collins, Colorado
 Ella A. Mead, B. S. (M. D., 1903, Denver and Gross Medical
 College), Physician.....Greeley, Colorado
 Thomas W. Metcalfe, B. S., Stockman....Fort Collins, Colorado
 Bertha M. Newlon, B. S. (Mrs. Wells).....San Jose, California
 Richard R. Parks, B. S., Superintendent, J. R. Parks Mill
 Company.....Denver, Colorado
 Frank O. Rasmussen, B. S., Assistant Department of Me-
 chanical Engineering Colorado Agricultural College....
Fort Collins, Colorado
 Glynn B. Stannard, B. S., Student Agricultural College....
Fort Collins, Colorado

Waltgen B. Smith, B. S., Chemist, Greeley Sugar Company
.....Greeley, Colorado
Henry F. Sturdevant, B. S., Student.....Portland, Oregon
Ned V. Tanner, B. S., Gauger, United Oil Company.....
.....Florence, Colorado
Richard W. Tanner, B. S., Mining Engineer..Florence, Colorado
Oma M. Veazey, B. S.....Fort Collins, Colorado
John Wilson, B. S., Bank Clerk.....Eaton, Colorado

1902.

Lorna E. Annis, B. S., Student.....Fort Collins, Colorado
Fred C. Bishopp, B. S., Assistant Entomologist, Government
Service.....Paris, Texas
Addie S. Bristol (Mrs. Clyde Brown), B. S..Fort Collins, Colorado
Lewis E. Cattell, B. S., Surveyor.....Hopedale, Ohio
Wilhelmine Douglass, B. S., Bookkeeper..Fort Collins, Colorado
Howard J. Faulkner, B. S.....Fort Collins, Colorado
Ernest N. Graves, B. S., Electrician Albuquerque Electric
Light Company.....Albuquerque, New Mexico
Nellie M. Killgore, B. S.....Fort Collins, Colorado
Oro McDermith, B. S., U. S. Geological Survey.....
.....Denver, Colorado
Oliver P. Pennock, B. S., Engineer.....Bellvue, Colorado
Robert E. Richardson, B. S., Civil Engineer.....
.....Grand Junction, Colorado
Olive L. Sheldon, B. S.....Fort Collins, Colorado
Harry True, B. S., Assistant State Engineer's Office.....
.....Denver, Colorado
Eleanor Tomlin, B. S., Stenographer.....Fort Collins, Colorado
Estes P. Taylor, B. S., Assistant Department of Entomology
and Botany, State College of Kentucky.Lexington, Kentucky

1903.

Helen Berry, B. S., Teacher.....Fort Collins, Colorado
Frank N. Bills, B. S., deceased, 1904.....Denver, Colorado
Wardwell Blydenburgh, B. S., Ranch Foreman.....
.....Saratoga, Wyoming
Donald L. Carver, B. S., Electrician.Steamboat Springs, Colorado
Albert R. Cliff, B. S., Teacher.....Fort Collins, Colorado
Charles E. Davis, B. S., Deputy City Engineer.....
.....Canon City, Colorado

Susan F. Dotson, B. S., Teacher.....Ludlow, Colorado
 Marie Gill, B. S., Graduate Student Ohio University.....
Columbus, Ohio
 Dwight D. Gross, B. S., Draftsman, Denver Union Water Co.
Denver, Colorado
 Bernard H. Hensel, B. S., Machinist.....Denver, Colorado
 Robert P. Jackson, B. S., State Engineer's Office.....
Denver, Colorado
 William A. Lamb, B. S., Geological Survey....Meeker, Colorado
 Fred N. Langridge, B. S. (M. E., 1904), Mechanical Engineer
Boulder, Colorado
 John H. Lewis, B. S., Farmer.....Timnath, Colorado
 Ray C. Murphy, B. S., Surveyor....Glenwood Springs, Colorado
 James D. Norvell, B. S., Apiarist.....Fort Collins, Colorado
 John A. Phillips, B. S., Surveyor.....Fort Collins, Colorado
 Joseph F. Reed, B. S., Assistant Agronomist, Department of
 Agriculture.....Washington, D. C.
 Fred Stearley, B. S., Wire Chief Colorado Telephone Com-
 pany.....Fort Collins, Colorado
 Florence Tharp, B. S., Teacher of Domestic Science.....
Fort Collins, Colorado
 Irwin W. Veazey, B. S., Clerk.....Fort Collins, Colorado

1904.

L. May Barkley, B. S., Graduate Student, Iowa College,
 Iowa Grinnell, Iowa
 Nellie Beach, B. S.,.....Fort Collins, Colorado
 L. Cale Estes, B. S., Bookkeeper.....Seattle, Washington
 Leonard C. Graves, B. S., Farmer and Stockman.....
Bloomfield, Colorado
 Frank L. Hadley, B. S., Supervisor of Manual Training,
 Oahu College.....Honolulu, Hawii
 Ansel Harding, B. S., Chemist, Great Western Sugar Com-
 pany.....Fort Collins, Colorado
 E. Clair Hotchkiss, B. S., Stockman.....Hotchkiss, Colorado
 Horace V. Hubbell, B. S., Assistant Engineer Kansas-Colo-
 rado Water Suit.....Garden City, Kans.
 Charles R. Jones, B. S., Entomologist, Government Service
Paris, Texas

Jessie L. Kissock, B. S.....	Fort Collins, Colorado
George E. Morton, B. S., Professor of Animal Husbandry, University of Wyoming.....	Laramie, Wyoming
I. Ernest Newsom, B. S., Assistant Veterinarian, Colorado Agricultural College.....	Fort Collins, Colorado
Fred C. Nichols, B. S., Graduate Student, Polytechnic Insti- tute of Brooklyn.....	Brooklyn, New York
Ralph Parshall, B. S., Instructor, Department of Physics, Colorado Agricultural College.....	Fort Collins, Colorado
Mattie Prendergast, B. S.....	Fort Collins, Colorado
Grace E. Sankey, B. S.....	Fort Collins, Colorado
Ethel M. Schureman, B. S., Kindergarten Teacher.....	Fort Collins, Colorado
Howard Sneddon, B. S., Civil Engineer.....	Salida, Colorado
Emma N. Stuver, B. S., Graduate Student, Colorado Agri- cultural College.....	Fort Collins, Colorado
Perry Zenor, B. S., Farmer.....	Fort Collins, Colorado

COMMERCIAL COURSE.

1898.

Charles L. Arnell, Locomotive Fireman.....	Alamosa, Colorado
Ray J. Baker, Secretary Brooks Tent and Awning Co.....	Denver, Colorado
William A. Doty, Bookkeeper and Stenographer, Denver City Tramway Company.....	Mendota Block, Denver, Colorado
Frank L. Garnick, Mechanic.....	Fort Collins, Colorado
Richard E. Hammond, Salesman, American Radiator Com- pany.....	Denver, Colorado
Agnes L. Hawley, Stenographer, Continental Oil Company	Pueblo, Colorado
Pearl Hays, Instructor in Stenography and Typewriting Kentucky Female Orphan School.....	Midway, Kentucky
Julius P. Olson, Merchant.....	Gypsum, Colorado
Inez Smith, Stenographer.....	Denver, Colorado
Bessie C. Wood (Mrs. Smith).....	Denver, Colorado

1899.

Byron K. Baird, United States Revenue Service.....	Honolulu, Hawaii
Charles J. Gilkison, B. S., Farmer and Shipper.....	Fort Collins, Colorado

William R. Headden, B. S., Instructor Renssalaer Polytechnic Institute.....Troy, New York
 George F. Kern, Agriculturist.....New Windsor, Colorado
 Lizzie M. Nicholson (Mrs Hershey).....Denver, Colorado
 Cecil G. Philip, Lumber Merchant.....Fort Lupton, Colorado

1900.

Eunice Chatfield, Stenographer.....Fort Collins, Colorado
 Mary A. Dickerson, Stenographer and Bookkeeper.....
Denver, Colorado
 James Elliott, Farmer.....Timnath, Colorado
 L. Cale Estes, B. S., Bookkeeper.....Seattle, Washington
 Mary E. Quick, Stenographer.....Fort Collins, Colorado
 Edith Schang (Mrs. F. C. Wilkes).....Fort Collins, Colorado
 Emmet O. Smith, Merchant.....Merino, Colorado
 Pearl Smith (Mrs. Brooks).....Denver, Colorado
 Marion E. Warren, deceased, 1901.

1901.

Cora M. Anderson, Bookkeeper and Stenographer.....
Fort Collins, Colorado
 Robert A. Brown, Teller, Denver Savings Bank.....
Denver, Colorado
 Dudley G. Dwyre, Stenographer, United States Civil Service
Tucson, Arizona
 Spencer Farmer, Merchant.....Fort Collins, Colorado
 Edwin W. Smith, Principal Commercial Department, North
 Denver High School.....Denver, Colorado
 Henry P. Roberts, Bookkeeper and Stenographer.....
Denver, Colorado
 Jennie M. Welch, Stenographer, Laramie Light and Power
 Company.....Fort Collins, Colorado

1902.

Albert E. Bayliss, Accountant Mesa County State Bank.....
Grand Junction, Colorado
 Annie C. Beach (Mrs. Prickett).....Fort Collins, Colorado
 Maud E. Benson, Stenographer and Bookkeeper.....
Fort Worth, Texas
 Clara Barry (Mrs. Jennings).....Fort Collins, Colorado

Horace M. Cattell, Stenographer and Bookkeeper...Adena, Ohio
 Emma L. Case, Stenographer.....Laramie, Wyoming
 Lena M. Gilkinson (Mrs. Chas. R. Jones).....Paris, Texas
 George Richardson, Bookkeeper and Stenographer, W. J.

Riley Mercantile Co.....Gypsum, Colorado
 Florence M. Roller, Stenographer, First National Bank....

.....Fort Collins, Colorado
 Delano F. Scott, Bank Clerk.....Loveland, Colorado

Charles H. Sisson, Stenographer, W. J. Riley Mercantile
 Company.....Eagle, Colorado

Irwin Sisson, Stenographer, Law Student....Washington, D. C.

George F. Schattinger, Law Stenographer....Telluride, Colorado

Claude J. Wilson, Bookkeeping, J. W. Hughes & Company
Meeker, Colorado

1903.

Julia A. Crary, Bookkeeper and Stenographer.....

.....Fort Collins, Colorado
 Morris Fliniau, Stenographer, New York Life Insurance Co.

.....Pueblo, Colorado

Noble D. Lane, Bookkeeper.....Blackfoot, Idaho

Mary E. Metcalfe, Stenographer.....Fort Collins, Colorado

Ada Showers, Stenographer.....Kearney, Nebraska

Harry C. Strong, Bookkeeper and Stenographer.....

.....Denver, Colorado

Howard Tubbs, Stenographer and Clerk...Fort Collins, Colorado

Mellie Wagye, Bookkeeper and Stenographer.....

.....Wellington, Colorado

Roy Zobel, Merchant.....Leadville, Colorado

Nora Zenor, Stenographer.....Fort Collins, Colorado

1904.

Alice Stella Bartels, Stenographer.....Pueblo, Colorado

Stella L. Bell, Stenographer.....Fort Collins, Colorado

Edith A. Beers, Stenographer.....Denver, Colorado

Evelyn S. Calvert, Stenographer.....Denver, Colorado

Frederic S. Fobes, Clerk Colorado & Southern.....

.....Fort Collins, Colorado

Calvin Goodrich.....Fort Collins, Colorado

Myrtle G. Hoffman, Stenographer.....Fort Collins, Colorado
 Emma E. Kissock, Postal Clerk.....Fort Collins, Colorado
 Ernest W. Thayer, Stenographer and Bookkeeper.....
Timnath, Colorado
 Howard W. Wester, Law Student, University of Virginia..
Charlottesville, Virginia

DOMESTIC NORMAL COURSE.

1904.

Eva A. Kimmons.....Fort Collins, Colorado

CALENDAR OF EXERCISES

1905-1906.

Entrance Examinations....	Monday and Tuesday, Sept. 4-5, 1905
Registration of Students.	Tuesday and Wednesday, Sept. 5-6, 1905
Fall Term Begins.....	Tuesday, September 5, 1905
Fall Term Closes.....	Friday, December 1, 1905
Winter Term Begins.....	Monday, December 4, 1905
Holiday Recess Begins.....	Friday, December 22, 1905
Holiday Recess Closes.....	Monday, January 8, 1906
Winter Term Closes.....	Friday, March 2, 1906
Spring Term Begins.....	Monday, March 4, 1906
Sermon Before Christian Associations.....	
.....	3 p. m. Sunday, June 3, 1906
Baccalaureate Sermon.....	8 p. m. Sunday, June 3, 1906
Commencement Exercises of Literary Societies.....	
.....	8 p. m. Monday, June 4, 1906
Junior Class Day Exercises.....	8 p. m. Tuesday, June 5, 1906
State Board of Agriculture Meets.....	Wednesday, June 6, 1906
Senior Class Exercises.....	10 a. m. Wednesday, June 6, 1906
Alumni Debate.....	8 p. m. Wednesday, June 6, 1906
Commencement Exercises.....	Thursday, June 7, 1906
Reunion of Alumni.....	8 p. m. Thursday, June 7, 1906

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